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Elżbieta Sobczak  
Beata Bal-Domańska  
Andrzej Raszkowski



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## Contents

<b>Preface</b> .....	9
<b>Dariusz Gluszczyk:</b> Regional e-Platform of Proinnovative Online Loans – A model approach.....	11
<b>Lech Jańczuk:</b> The perennial financial forecasting as a tool for predicting performance-based budgeting.....	18
<b>Małgorzata Karczewska:</b> The gross expenditures on R&D and the economic growth level in the EU countries.....	27
<b>Bożena Kuchmacz:</b> Man as a source of local social capital.....	36
<b>Alina Kulczyk-Dynowska:</b> The spatial and financial aspects of a protected area as exemplified by the Roztocze National Park.....	45
<b>Liliia Lavriv:</b> Strategic approaches to the management of regional development in Ukraine: Current state and conceptual areas of improvement.....	54
<b>Joanna Ligenzowska:</b> The impact of innovation on the development of the Małopolska Region.....	64
<b>Magdalena Łyszkiewicz:</b> The regional differentiation of financial autonomy of Polish communes.....	72
<b>Grygorii Monastyrskiy, Yaroslav Fedenchuk:</b> Modernization of regional policy of Ukraine in European integration conditions.....	81
<b>Artur Lipieta, Barbara Pawelek:</b> Comparative analysis of Polish NUTS 2 level regions in terms of their use of EU grants in 2007–2013.....	91
<b>Dariusz Perło:</b> Clusters and smart specializations.....	100
<b>Dorota Perło:</b> The soft model of the regional labor market situation of the youth.....	109
<b>Katarzyna Peter-Bombik, Agnieszka Szczudlińska-Kanoś:</b> Young people on the labor market as a challenge for social policy in selected Polish voivodeships.....	118
<b>Jan Polski:</b> Gordian knots of the regional development in Eastern Poland.....	127
<b>Andrzej Raszkowski:</b> The strategy of local development as a component of creative human capital development process.....	135
<b>Elżbieta Sobczak:</b> Specialization and competitiveness of workforce changes in the sectors grouped according to R&D activities intensity in European Union countries.....	144
<b>Jacek Sołtys:</b> Typology of low developed non-metropolitan sub-regions in the European Union.....	153
<b>Edward Stawasz:</b> Determinants of knowledge transfer processes in a region.....	166

<b>Andrzej Sztando:</b> Workshops as a method of social consultations in the process of local strategic planning.....	175
<b>Maciej Turała:</b> Equalization of territorial units' incomes – A case study of Poland .....	187
<b>Alla Vasina:</b> Development of infrastructure as an important factor of regions' economy structuring .....	196

## Streszczenia

<b>Dariusz Głuszczyk:</b> Regionalna e-Platforma Proinnowacyjnych Pożyczek Internetowych – ujęcie modelowe .....	11
<b>Lech Jańczuk:</b> Wieloletnie planowanie finansowe jako narzędzie predykcji budżetu zadaniowego.....	18
<b>Małgorzata Karczewska:</b> Nakłady na badania i rozwój a poziom rozwoju gospodarczego w Unii Europejskiej.....	27
<b>Bożena Kuchmacz:</b> Człowiek jako źródło lokalnego kapitału społecznego... ..	36
<b>Alina Kulczyk-Dynowska:</b> Przestrzenne i finansowe aspekty funkcjonowania obszaru chronionego na przykładzie Roztoczańskiego Parku Narodowego .....	45
<b>Liliia Lavriv:</b> Podejścia strategiczne w zarządzaniu rozwojem regionalnym na Ukrainie: Stan obecny i koncepcja doskonalenia .....	54
<b>Joanna Ligenzowska:</b> Wpływ innowacji na rozwój regionu Małopolski.....	64
<b>Magdalena Łyszkiewicz:</b> Regionalne zróżnicowanie samodzielności finansowej polskich gmin .....	72
<b>Grygorii Monastyrskiy, Yaroslav Fedenchuk:</b> Modernizacja polityki regionalnej Ukrainy w warunkach integracji europejskiej .....	81
<b>Artur Lipieta, Barbara Pawelek:</b> Analiza porównawcza polskich regionów szczebla NUTS 2 ze względu na wykorzystanie funduszy unijnych w latach 2007–2013.....	91
<b>Dariusz Perło:</b> Kłustry a inteligentne specjalizacje .....	100
<b>Dorota Perło:</b> Model miękkiej sytuacji osób młodych na regionalnym rynku pracy .....	109
<b>Katarzyna Peter-Bombik, Agnieszka Szczudlińska-Kanoń:</b> Młodzi ludzie na rynku pracy jako wyzwanie dla polityki społecznej wybranych polskich województw .....	118
<b>Jan Polski:</b> Węzły gordyjskie rozwoju regionalnego w Polsce Wschodniej... ..	127
<b>Andrzej Raszkowski:</b> Strategia rozwoju lokalnego jako element procesu kształtowania kreatywnego kapitału ludzkiego .....	135
<b>Elżbieta Sobczak:</b> Specjalizacja i konkurencyjność zmian zatrudnienia w sektorach wyodrębnionych według intensywności nakładów na B+R w państwach Unii Europejskiej .....	144

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<b>Jacek Soltys:</b> Typologia nisko rozwiniętych niemetropolitalnych podregionów Unii Europejskiej .....	153
<b>Edward Stawasz:</b> Determinanty procesów transferu wiedzy w regionie .....	166
<b>Andrzej Sztando:</b> Warsztaty jako metoda konsultacji społecznych w procesie lokalnego planowania strategicznego.....	175
<b>Maciej Turała:</b> Równoważenie dochodów jednostek terytorialnych – studium przypadku Polski .....	187
<b>Alla Vasina:</b> Rozwój infrastruktury jako ważny czynnik strukturyzacji gospodarek regionalnych.....	196

**Dariusz Perło**

University of Białystok

e-mail: d.perlo@uwb.edu.pl

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## CLUSTERS AND SMART SPECIALIZATIONS

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## KLASTRY A INTELIGENTNE SPECJALIZACJE

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**Summary:** The aim of this article is to establish whether the “smart specializations” concept could be efficiently utilized in actions towards the development of Polish regions. In order to attain this goal, a short characteristic of the whole idea of smart specializations has been provided. The possibilities of its practical implementation have been described in the context of introducing the so-called “Cluster Development Policy” in the previous programming period. The interdependences between the two concepts have also been indicated.

**Keywords:** clusters, smart specializations.

**Streszczenie:** Celem referatu jest próba odpowiedzi na pytanie, na ile skuteczne może być wykorzystanie w działaniach na rzecz rozwoju polskich regionów koncepcji tzw. „inteligentnych specjalizacji”. Dla realizacji tego celu została krótko scharakteryzowana idea inteligentnych specjalizacji. Możliwości jej wdrożenia w praktyce zostały omówione w kontekście doświadczeń z wdrażaniem w poprzednim okresie programowania tzw. „polityki rozwoju w oparciu o klastry”. Zostały także wskazane zależności pomiędzy obydwoma koncepcjami.

**Słowa kluczowe:** klastry, inteligentne specjalizacje.

## 1. Introduction

In the context of the Europe 2020 strategy as well as the current programming period documents, regarding the EU regional policy, the key category belongs to the so-called smart specializations [vide Godlewska 2013]. Taking into account that concepts and priorities declared in the documents are replicated to national and regional documents, which is in accordance with the hierarchy of the programming system of the community as a whole and the individual countries, references to smart specializations have lately been included in numerous newly adopted documents.<sup>1</sup> This seems parallel with

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<sup>1</sup> The key document in this case is: *Guide to Research...* [2012].

another concept “popular” in the previous programming period, i.e. economic clusters. These concepts reveal greater similarities – many authors pay attention to their mutual interdependences. Clusters are said to play a significant role in constructing smart specializations [Peńkowski 2014] but also, on the contrary, smart specializations are important for supporting cluster initiatives [Janusz 2014].

The article is an attempt to answer the question if the theoretical category of smart specializations has a chance to be efficiently implemented in regional policy practice, especially taking into account Polish conditions. As a point of reference, I present expertise gained from implementing a different concept, which was adopted from theory – economic clusters.

## 2. Economic clusters and regional development programming

Shifting the emphasis from the support of clusters to smart specializations can be seen as a natural consequence and progress. The concept of smart specializations, from the economic policy’s point of view, is more comprehensive and can be more useful for the parties of the policy, such as e.g. regional authorities.

On the other hand, there is a risk that the concept created by theoreticians shall be misrepresented in the process of transferring it into strategic documents and bureaucratic procedures. An identical situation took place with the concept of clusters.

Programming documents, publications as well as reports connected with the realization of the previous cluster policy and the development policy based on clusters, reveal considerable differences in the attitude to these issues of various engaged parties. The question of a definition, identification and rules for supporting cluster initiatives proved to be diversified. The most significant measure, which shapes the way the issues under consideration are perceived, was the possibility to reach personal targets through a proper interpretation. As already stated, the differences were revealed even in the attitude towards the definition of a cluster (It is visible even in the language – the spelling of the word “cluster” can be found in different papers in either Polish or English. There are also different approaches to declension of this word). In most research papers, Porter’s definition is adopted as a basis.<sup>2</sup> It assumes that industrial clusters are a geographical concentration of competing companies in interrelated sectors that are connected with each other economically and share the same skills, technology and infrastructure [Porter 1990]. However, when clusters became the subjects of intervention and especially the beneficiaries of financial means, many parties demanded the extension of the definition. Due to this, very often, especially in programming documents, competition criteria etc., the clusters were identified mainly with the so-called cluster initiatives i.e. parties, organizations or organizational structures gathering cluster’s participants (firms, surrounding institutions, universities).

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<sup>2</sup> It was indicated, among others, in the following publication: Wolman, Hincapie [2010].

In this context, the post of a cluster's coordinator emerged as an organizing body as well as an animator of the development of interactions, connections, knowledge flow and cooperation in a cluster and a provider of specialized services for firms and other entities operating in a particular concentration. It should be acknowledged that identifying clusters with clusters' initiatives is popular also in literature [Sölvell, Lindqvist, Ketels 2003]. However, shifting the emphasis from clusters to initiatives has its implications. On the one hand, it is definitely easier to define beneficiaries and establish the criteria for competition when an entity has personality, organs, etc. than to undertake activities dedicated to "the geographical concentration of firms." On the other hand, the need to quantify and clarify every definition, which is typical of a bureaucratic style, can lead to certain dangers. As with any similar competition procedures, the "formal" and "technical" criteria decide mostly about the possibility of gaining support. Due to that, cluster initiatives were introduced not with the aim of commencing actual long-term connections, but in order to gain considerable benefits in the form of specific funding. That is why, the durability of these activities is a source of concern. After the termination of funding of cluster initiatives, their activity is very often suspended. The lack of website updates can serve as a proof. The representatives of institutions granting financial support are fully aware of the situation. Therefore, in the current programming period and in new strategies in many regions, clusters are being marginalized.

Do the aforementioned facts lead to any conclusions connected with the smart specializations' potential as a *leitmotif* of the EU innovation policy in the current programming period? It seems that they do. Introduction of a smart specialization concept, similarly to the introduction of the concept of clusters, is the implementation of a theoretical concept to a regional and competitive policy. Even the authors of the concept under consideration pay attention to these facts. They notice that a smart specialization is a concept of policy which, despite being formulated only recently by academic experts, very quickly gained considerable influence upon economic policy, especially in Europe [Foray, David, Hall 2011]. Due to the fact that, in the case of a smart specialization, the transition from a theoretical concept to its implementation to economic policy took relatively short time, smart specializations are not characterized by major discrepancies, as opposed to clusters. The authors want to focus public attention on the fact that smart specializations are not, in fact, anything new. Classical economists, such as A. Smith with the theory of absolute advantage or D. Ricardo with the theory of comparative costs [vide Kardas 2011], introduced the benefits of specializations. This concept relates also to the neo-factor theories, which highlight the role of human resources and qualifications, and neo-technological theories that pay attention to the scope of innovations [Kardas 2011]. The role of a specialization is emphasized by the aforementioned Porter's theory of competitive advantage.



### 3. Cluster policy and smart specializations

The European Commission has provided a comprehensive directory of instruments to support the development of research and innovative strategies for smart specializations (RIS3) that was recommended for Member States and regions. The Smart Specialization Platform (the so-called S3 Platform), established in the Institute for Prospective Technological Studies, serves to prepare the concept of a smart specialization and maintain perseverance of the policy in this field. It serves to provide advice, materials with data, clues and methodological support as well as to present examples of the so-called good practice and the tools necessary to educate not only regional representatives but also experts. As part of the platform, the governing bodies, who take part in designing the research and innovative strategies for a smart specialization (RIS3), are provided with workshops, trainings and the possibility of mutual verifications.

According to the recommended methodology, the Polish National Smart Specialization Strategy was prepared and adopted on 8 April 2014 as part of the Entrepreneurship Development Program. Eighteen smart specializations were identified and grouped into five thematic areas [*Krajowa strategia...* 2014]:

**I. HEALTHY SOCIETY:** 1. Medical engineering technologies, including medical biotechnologies. 2. Diagnosis and treatment of civilization diseases and personalized medicine. 3. Production of medicinal products. **II. AGRI-FOOD, FORESTRY-TIMBER AND ENVIRONMENTAL BIOECONOMY:** 4. Innovative technologies, processes and products of the agri-food and forestry-timber industry. 5. Healthy food (high quality and organic production). 6. Biotechnological processes and products of household chemistry and environmental engineering

**III. SUSTAINABLE ENERGY:** 7. High efficiency, low-emission and integrated energy production, storage, transmission and distribution systems. 8. Smart and energy efficient construction. 9. Environmentally friendly transport solutions. **IV. NATURAL RESOURCES AND WASTE MANAGEMENT:** 10. Modern technologies for sourcing, processing and use of natural resources and production of substitutes thereof. 11. Minimizing waste, including waste unfit for processing and use of waste for material and energy purposes (recycling and other recovery methods). 12. Innovative technologies for processing and recovery of water and reducing its consumption. **V. INNOVATIVE TECHNOLOGIES AND INDUSTRIAL PROCESSES (IN HORIZONTAL APPROACH):** 13. Multifunctional materials and composites with advanced properties, including nano-processes and nano-products: 14. Sensors (including biosensors) and smart sensor networks. 15. Smart grids and geo-information technologies. 16. Electronic based on conducting polymers. 17. Automation and robotics of technological processes. 18. Optoelectronic systems and materials.

According to the Polish strategy declarations, it was decided that smart specializations will be defined both nationally and regionally and that national smart specializations shall not be superior to the ones defined regionally. But declarations

finish at this point. As the authors state “similarities are visible between nationally and regionally declared specializations.” It can be the result of adopting similar, objective methods. It is probable, however, that in this case a “top-down” mechanism is being introduced, which is typical of an official style and repeats the approach adopted in this kind of circumstances – it is necessary to take into account what was written in the higher-rank documents because it can generate funding. It resembles the approaches adopted by local authorities when other programming documents were being prepared. Frequent introduction of objectives as cases connected with renewable energy led to the emergence of devices in places totally not adjusted, only because of the possibility of funding and the existence of proper references in strategies. Smart specializations, according to the assumptions of the authors of the concepts, were supposed to be defined in the process of the so-called “entrepreneurial research.” However, the aforementioned procedures and conditions connected with the references in different documents lead to a situation in which the flexibility in searching for a smart specialization at a regional level is insufficient.

The catalog of smart specializations created in particular regions is as follows [Krajowa Izba Gospodarcza 2014]:

**Dolnośląskie Voivodeship** – chemical, pharmaceutical, automobile, electrical, extractive, IT industries as well as medical, biological, mathematical, physical sciences and communication; **Lublin Voivodeship** – mainly bioeconomy, medical and pro-health services, IT and automated technology as well as low-emission energy production; **Łódź Voivodeship** – modern textile and fashion industry, advanced building materials, medicine, pharmacy, cosmetics, energy production, innovative agriculture and food processing, IT, telecommunication, mechatronics, biotechnology, information and communication technology; **Małopolskie Voivodeship** – life science, ICT, chemistry and sustainable energy; **Mazowieckie Voivodeship** – safe food, intelligent management systems, modern services for business as well as high standard of living; **Opolskie Voivodeship** – chemical technologies, building and wood, engineering and metal products industry, energy-support industry, agri-food technology; **Podkarpackie Voivodeship** – aviation and astronautics, quality of life, IT, telecommunication; **Podlaskie Voivodeship** – green industry, specialization in eastern market; **Pomorskie Voivodeship** – information and communication technology, energy production, logistics, business services, cosmetic and pharmaceutical branch, biotechnology, creative industry and off-shore technology; **Śląskie Voivodeship** – energy production, medicine, ICT; **Świętokrzyskie Voivodeship** – metal moulding and casting industry, construction, health tourism, healthy food, information and communication technology, effective energy use; **Warmińsko-Mazurskie Voivodeship** – water economy, furniture manufacturing, high-quality food; **Zachodniopomorskie Voivodeship** – bioeconomy, marine activity, logistics, machine and metal industry, creative industries, ICT, tourism and health; **Lubuskie Voivodeship** – green economy, health and quality of life, innovative (modern) traditional industry, business collaboration and cooperation; **Wielkopolskie Voivodeship** – biomaterial and food for conscious consumers,

**Table 1.** The number of cluster initiatives according to sectors and regions

	Biotechnology	Sea sector	Construction	Chemistry	Education	Ecoenergetics	Ecology	Energetics	IT	Aviation	Media, communication	Medicine	Automotive	Polygraphy, advertising	Wood industry	Metal industry	Food industry	Transport	Tourism	Textile industry, clothes	Model manufacture	Others	Total	Non-clustered specializations	Specializations and clusters	Clusters without specializations		
Dolnośląskie	1				2			1			1		1									3	9	3	2	3		
Kujawsko-Pomorskie															3		1						1	5	4	1	1	
Lubelskie				1	1			1	1			1	1	1			3		5				1	16	2	2	7	
Lubuskie				1	1											1	1	1					1	6	2	0	5	
Łódzkie			2							1							3		2	5			1	14	4	3	1	
Małopolskie	1			1	1	1		5			1		1								1	3	15	1	2	6		
Mazowieckie	3	1			2		1	6	1	1	1	5	1	1	1		1	1					2	27	0	2	11	
Opolskie			2	1	1			1						1					3					9	2	3	3	
Podkarpackie				1	1			3	3							2	1		2				2	15	0	2	5	
Podlaskie			1		1						1				1	1	3		2	1			2	13	1	0	9	
Pomorskie			1	1				1										3	2				3	11	2	2	3	
Śląskie			1		3		1	5	1		1			1		1	1	1		1	1	1	1	1	18	0	3	8
Świętokrzyskie			1				2										1		2			1	3	10	3	2	2	
Warmińsko-Mazurskie					1		1	2			1				4	1	2						2	14	0	2	5	
Wielkopolskie				1	1		1	3	3			1	1	1	1	1	1							13	2	2	7	
Zachodniopomorskie		2		1				1							2	1	1		2				1	11	3	2	5	
Total	5	2	9	5	4	14	2	8	29	6	2	6	7	5	15	6	19	6	21	6	3	26	206	29	30	81		

Gray color in the table means that the sector is compatible with regional specialization.

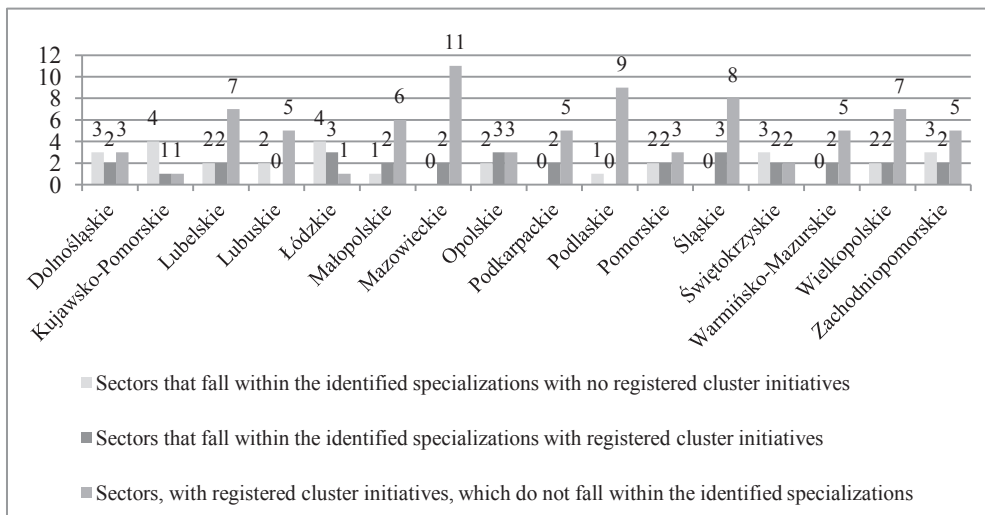
Source: own elaboration on the basis of: Krajowa Izba Gospodarcza [2014] and *Klustry w Polsce...* [2012].

interiors of the future, industry of the future, specialized logistics processes, ICT based development, modern medical technologies; **Kujawsko-Pomorskie Voivodeship** – the highest quality safe foods – food processing, fertilizers and packaging; medicine, medical services and medical tourism; motorization, transport equipment and

industrial automation, production of road and rail transport equipment together with the production of parts and components as well as with the production of industrial automation; tools, injection mould tools, plastics industry articles; information processing, multimedia programming, ICT services; bio-smart specialization – natural potential, environment, energetics; transport, logistics, trade – land and water routes; cultural heritage, arts, creative industries.

As can be observed, some catalogs constitute a direct copy of specializations defined in the Europe 2020 strategy and on the national level. In some cases they vary in terms of terminology, taking sometimes more effective sounding. Due to the fact that, as mentioned earlier, particular regions entered the same fields as the ones listed on the national level, it is hard to speak about specializations as such. Similarly, it is not, by definition, favorable for a regional specialization to enter relatively many fields, which can be observed in the case of some regions. In other examples, the list of fields is simply a list of business branches, which generally seems contrary to the whole concept of smart specializations. The results of work in regions as well as the fact that in some cases the process of forming smart specializations lasted surprisingly long allow supposing that traditional factors, both particular or political, had strongly influenced the lists. As with many notions and scientific concepts, also this one can be distorted by bureaucratic procedures and reconciliation mechanism of a political character.

Table 1 presents the comparison of the regionally identified smart specializations and the registered cluster initiatives. As can be seen, there is a significant diversification when it comes to overlapping of the two presented categories.



**Figure 1.** Sectors and specializations

Source: own elaboration on the basis of Krajowa Izba Gospodarcza [2014] and *Klasy w Polsce...* [2012].

The biggest number of cluster initiatives was registered in Mazowieckie Voivodeship. They represent 13 sectors, but only two match the regional specialization. In Śląskie Voivodeship, in 11 sectors in which the clusters were identified, only three of them match the region's specializations. In Wielkopolskie Voivodeship, there have been no cluster initiative registered within two specializations. There are two sectors with clusters corresponding to the specializations. The clusters were additionally registered in seven sectors that do not fall within the regional specialization. In general, in most regions, the number of clusters that do not fall within the defined specializations is bigger than the number of clusters that do fall within them. Only in Opolskie Voivodeship, the clusters were registered in the same number of sectors that either fall or not within the specializations. In Lubuskie and Opolskie Voivodeships neither of the registered initiatives fall within the sectors that would correspond to regional specializations.

#### 4. Conclusions

The summary of the results of actions for the development of clusters with smart specializations identified in the regions proves that it is difficult to detect a practical correlation between these concepts. Both of them seem to be treated rather instrumentally.

Unfortunately, the aforementioned cases resemble the situation connected with the clusters' support. The concept, based on rational theoretical grounds, when transferred into official language and procedures, is often simplified and made more consensual. In following stages many things can happen, such as the primacy of "technical" realization of quantitative indicators over substantive issues. This can be the source of concern if the aforementioned cases will not be a barrier for the realization of ambitious assumptions concerning the development of innovation, especially on the national and the regional level.

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