

## SMART SPECIALIZATION AS A WAY OF STRENGTHENING THE INNOVATION POTENTIAL OF REGIONS

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**Abstract.** The subject of the work is the concept of smart specialization adopted in the European Union in 2010 and particularly its implementation in Poland. The aim of this work is to identify and present the concept of smart specialization and the rationale for its establishment and define the role of this concept as a tool to strengthen the innovative potential of the regions in Poland. The material was taken from the European Union documents and adopted by the regional governments in Poland strategies developed for 2014–2020. The paper presents the origins, theoretical basis and essence of the concept of smart specialization, there is discussed the role of smart specialization in creating strategies and development policies and strengthening the innovation capacity of countries and regions and proposed by the Polish regions smart specializations for 2014–2020. Smart specialization programs in Poland are on the one hand a reaction to the possibility of obtaining funds from the European Union, on the other hand a new opportunity for the real reconstruction of standard strategy of regional development.

**Key words:** smart specialization, development strategies, regional development, innovation, regional competitiveness

### INTRODUCTION

At least for 20 years Europe seeks to speed up economic development and catch up with global competition in most developed countries of the world. In 2000 the European Union adopted the so-called Lisbon Strategy, which, through the development

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of research, implementation of innovation and knowledge based economy on had to overcome the distance of the Member States of the European Union in the field of productivity to the United States, Japan and other rapidly developing countries of the world. The failure of this strategy, despite attempts to revise in Gothenburg and the phenomenon of the economic crisis that swept through Europe at the end of the first decade of the XXI century, posed the need for a new perspective on strategy and development of Europe and creative modification of its objectives and mechanisms of development. An important word in this regard was the emergence of the concept of smart specialization (SS) of countries and regions. This concept was officially adopted by the European Council in June 2010 and was published in the document of the *European Union Europe 2020 – a strategy for smart, sustainable and inclusive growth* whose implementation is guided by the achievement of certain benefits such as increased employment, increased R&D investment, increasing energy efficiency and reducing the size of poverty [EC 2010]. The concept of smart specialization has been incorporated into other strategic development programs for the financial perspectives for the period until 2020 and sometimes years dating to 2030. The Member States and regions, by the package of EU regulations concerning the use of European Structural Funds, were to adopt this concept in the work of preparing them to act within the framework of the 2014–2020 financial perspective.

Poland, as a country and provincial governments, preparing strategic documents of regional development in the 2014–2020 financial perspective included the concepts of SS strategies for development, especially in programs of research and innovation. Although in Polish conditions, the concept of SS sounded not too familiar, its use was intended to achieve two objectives. The first goal, of a systemic nature, was to use this concept as a way to transform the economy, improving its efficiency and modernization by strengthening innovation of enterprises, enhancing and extending the offer of innovative products and services also improving the functioning of socio-economic systems in regions. The second goal of a practical nature was connected with the search for acquisition opportunities and make full use of European funds for the development of these areas that could have a positive economic effects [Baran and Hajduk 2014].

## THE AIM AND METHODS

The aim of the paper is determining and presenting: the concept of smart specialization and circumstances of establishing them; the role of smart specialization in strengthening the innovation potential of countries and regions; the SS accepted by the regional governments for the years 2014–2020 in Poland. The basic materials for research are European Union documents related to the regional strategies of innovation, mainly documents of third generation as well as the regional and country documents elaborated in Poland for regional development strategies in the frame of the EU programming period 2014–2020. Analysis of documents and subject literature is the main method of the study.

## GENESIS, THEORETICAL BASIS AND ESSENCE OF THE CONCEPT OF SMART SPECIALIZATION

The concept of SS emerged in the European Union to seek opportunities and to accelerate the development of the Member States, when in the first decade of the XXI century, in an emergency of the financial crisis, it became evident that adopted in 2000. The Lisbon Strategy would not bring the expected effects of reducing the development gap between Europe and the United States especially in the field of productivity and innovation. The concept was developed in 2005 by an expert group Knowledge for Growth by the European Commissioner for Research and Innovation of the EU, in which an important role played academics involved in regional development. The initial outline of this concept was formulated in 2008 and then developed in 2009–2010 during the preparation of the new EU economic strategy for the next decade [Kardas 2014]. The concept was published by the European Commission in March 2010. Officially adopted by the European Council in June 2010 in the form of the *Europe 2020 – a strategy for smart, sustainable and inclusive growth* [EC 2010]. Since then the concept of SS has become a major concern for both the sphere of science and public administration and business.

At the core of the development of a new concept of SS was the use of well-known theoretical concepts related to territorial and regional development developed by science as well as practical experience gained during many years of cooperation between the EU and regions, in particular conclusions from the evaluation of EU regional policy and the evaluation of the effectiveness of national and regional development strategies, especially regional innovation strategies. The concept of SS has become a new concept to formulate an innovation strategy for countries and regions and knowledge based economy. In the development of this approach outweigh the practical aspects arising from its use for the formulation of strategic development programs. For the purposes of the practice of preparing and implementing strategies and plans for development policy were developed basic assumptions and recommendations to countries and regions, and were prepared information and institutional forms of support. Among others, they took the form of *Guide to Research and Innovation Strategy for smart specialization* (RIS3) or *Platform of Services* (S3) that support the regions in their efforts at development and implementation of SS strategies.

The idea of smart specialization is based on the assumption that no Member State of the EU or any region can achieve satisfactory results in all areas of the economy and especially in the area of science, technology and innovation [Pilarska 2014, Baran and Hajduk 2014], but individual countries and regions have a specific potential that can differentiate in a certain area. Taking into account the internal and external circumstances and available resources the acceptance of the concept of SS provides opportunities to achieve economic growth, not only by the countries and regions that are leaders in the field of science and technology, but also by those that do not stand out specially, but adequately resourced will focus their efforts on key areas and unique features of their assets. The leading regions in the field of science and technology can invest in the development of general purpose technologies, or a combination of different technologies to apply. Regions with less scientific and innovative potential, showing a tendency to

follow the leading regions should invest in it to best use general-purpose technologies in the areas important for the economy of the region. The concept of SS has therefore indeed two sides faces. The first is the need to focus the activities in selected areas (domains) just to exploit the existing potential for knowledge creation which scope and spread is becoming an important driving force for innovation and production growth in the region. The second consists of synergy of attention and efforts on specific areas (domains) in order to form distinctive and original areas of expertise in the region for the future [Foray et al. 2011].

Authors of the concept of SS are convinced that it can be particularly beneficial for countries and regions which are not leaders in the field of science and technology when they focus efforts on key areas, unique resources and priorities in order to achieve certain critical mass, which will bring economies of scale and positive externalities associated with the creation and use of knowledge. From the concept of SS, it is expected that they will lead to a greater variety of regions that are increasingly interdependent. The essence of this concept is to discover entrepreneurship, both at local, regional and national levels, which should reveal owned assets and make better use of endogenous resources [Pilarska 2014].

The concept of SS has been enthusiastically received by the creators of economic policy and had in fact become the basis for creating a new generation of research and innovation policy. It has been seen as new opportunities to support research and innovation. Smart specialization has been recognized as an important element of smart growth, which includes businesses, research centers, collaborating institutions and public authorities and local government. Development of the concept of smart specialization was initiated by the European Commission for the purpose of conducting economic policy in particular regional and innovation policy, but its shape was formulated mainly by academia. The concept is an example of demand posed by the economic and political practice addressed to representatives of science who use the rich theoretical achievements of economics, economic geography, regionalism and spatial planning, have created the concept of development in the regions which is supportive and attractive for the EU administration and public administration and local government in the Member States.

## **THE ROLE OF SMART SPECIALIZATION IN CREATING STRATEGIES AND DEVELOPMENT POLICIES**

Development, implementation and deployment of smart specialization strategies should take the form of SS. It means, therefore, a strategic approach to economic development through targeted support for research and innovation. The process of creating the strategy includes the steps of creating a vision, identification of competitive advantage, prioritizing strategies, formulation and use policies in order to maximize the knowledge based potential of development of each country and region [Stawicki and Wojnicka-Sycz 2014]. Such a strategy should identify ways and means to the relevant territorial unit grow and achieve certain objectives in the most favorable possible conditions for it while maintaining openness to the outside and cooperation with other entities. The creators of the concept of smart specialization believe that an effective strategy should first focus

on the process of discovery entrepreneurship and niches, which should be the basis of specialization based on the assets of knowledge, research and innovation inherent in both the public and private sphere.

The fundamental weakness of Europe's international competitiveness that are being addressed by implementing the concept of SS, authors completed the excessive investment fragmentation and lack of coordination of research and innovative projects. Countries and regions not sufficiently benefit from the achievements earned by others and imitating the leaders waste resources on inadequate to the needs and possibilities projects and activities [Godlewska 2013]. Choosing a small amount of key areas where there are grounds for specialization can help countries and regions occupy a unique position or a proper place in the systems between different countries and regions. The choice of economic specialization, using the innovative potential and resources of knowledge and skills should translate into faster economic growth and strengthening the competitiveness of the region. Smart specialization should create and implement enterprise, research centers, collaborating institutions and local public authorities.

The greatest expectations related to the implementation of the SS reposed in areas with the greatest development potential and in key technologies and development processes that stimulate innovation and strengthen the competitiveness of the area. The key technologies suit systemic importance, because they allow the formation of innovative processes, goods and services in all sectors of the economy. The key technologies in the EU included micro- and nano-electronics, nanotechnology, photonics, advanced materials, industrial biotechnology and advanced manufacturing technologies [EC 2012]. For proper construct of a strategy for SS it becomes important to identify the main chains of links between individual economic areas and leading technologies that may create a sort of axis of smart specialization [Godlewska 2013]. As a result, the SS should come to the technological modernization of existing industries and other sectors, including the development of specific modified technology in the sector. Smart specialization should lead to the transformation of sectors towards activities with higher added value [Stawicki and Wojnicka-Sycz 2014].

As required by RIS3 implementation of the strategy for SS may take the form of one of the following processes:

- Transformation, which marks the transition from the current to the new sector based on cooperation between institutions and companies focused on the use of resources and competences.
- Modernization, which should be understood as the technological modernization of existing industry resulting in the development of specific applications of key technologies and supportive technologies and improving the quality and efficiency of the sector.
- Diversification indicating sustain potential synergies at the interface of the currently existing and emerging activities, which should be more attractive and profitable.
- Radical transformation, meaning rise as a result of the activities of R&D and Innovations of a new field, or a new sector using available resources and competences in the region.

Selecting one of these processes or shaping the structure of their use requires significant changes and severity of innovative processes in which the sphere of business, science and local authorities must engage.

The role of smart specialization to strengthen the innovative potential of countries and regions.

The adoption of the concept of SS is in fact an attempt to create a new generation of policy, research and innovation that goes beyond the classic investing in research and development and new technologies. The basic assumption of the concept of SS is increasing innovation and competitiveness of the regions on the basis of its endogenous potential and already operating sectors [Słodowa-Chełpa 2013]. The task of SS is creating the potential for innovation by stimulating grassroots activity and internal and international cooperation and targeted support, which could lead to the achievement of specific competitive advantage. Strategy of SS recognizes the role of the different forms of innovation and both technological as well as organizational innovation also social one and it applies to both high and modern technology sectors and traditional technologies. Innovation strategy (IS) implementation should lead to the technological modernization of existing sectors of the economy through the development of specific applications of major technologies and key supportive technologies in the sector.

The creators of the concept of SS offered four main principles on which strategy should be based [Nazarko 2014]. They are as follows:

- Selection of a limited number of priorities for R&D and innovation taking into account available resources and place in the international specialization. The analysis of strengths and weaknesses and the opportunities and constraints of development is useful to choose and define priorities.
- Discovering, emergence and stimulation of entrepreneurial talents and strengths by adjusting the potential of R&D, technology and innovation to meet the needs of the region and its socio-economic features.
- The development of network systems and clusters at a high level and creating a space for the formation of intra-regional and external cross-sectoral and inter-regional links.
- Effective management of the innovation system based on cooperation and public-private partnerships.

It is about inclusion in the processes of pro-innovation not only research institutions, businesses and public authorities but also customers and users of innovation. To facilitate the emergence and assessment of SS, there was proposed the establishment of experimental platforms. Based on these principles, we can take concrete steps to formulate and design a practical method of selection of SS [Foray et al. 2012, Nazarko 2014, Piątkowski et al. 2014].

World Bank recommends in developed for Poland review of national and regional strategies, research and innovation using a range of methods that can be helpful when choosing a SS as [Nazarko 2014, Piątkowski et al. 2014]:

- Analysis of the scientific and technological potential and its adaptation to the economic and social system of the region. An attempt to highlight the unique areas and economic characteristics of the region.
- Evaluation of networking and searching for clusters and other links forming local and regional innovation systems.

- Forecasting the future direction of changes and trends in the long term (foresight) and participatory creation of a strategic vision for the region.
- Market selection of strategies in regions with unrecognized competitive advantages carried out experimentally by the market with the support of local and regional authorities.
- Competitive selection useful in developed regions, which consists of competitive activity of companies using SS and creating grassroots strongly linked systems competing for funds with companies operating in different sectors of the economy.
- Case studies of existing business groups of economic specialization or value chains using different metrics and indicators of the level of development.
- Disclosure of potential centers of a sub-regional or local level in a spatial region, with quantitative and qualitative characteristics of having the capacity to attract innovative forms of management and development. This means taking into account the territorial approach to spreading innovation fit the specific character of selected areas of smart specializations.

The listed ones, as well as other methods used in the development of regional research and innovation strategies for SS offered by RIS3, are generally used in the creation of integrated, bottom-definable economic transformation programs under the name of *Regional innovation strategies* (RIS), which are formed generally as supporting documents to already developed more elaborate *Strategy for the development of the regions* (SDR). Linking these two strategic documents was specified in the *Act on regional self-government*. RIS have been developed and updated in Poland not only to provincial regions, but often also for sub-regional and local systems.

Regional innovation strategies updating especially work on the design of smart specialization of regions for the period 2014–2020 introduced a new content and quality in strategic planning, different from the one that was applied for the period 2007–2013. The main difference relates to depart from the sectoral approach of the innovation process for cross-sectoral, integrated actions in building innovative potential. Another important feature is to move away from the focus of innovation policy on the development of enterprises to create a comprehensive and complementary innovation systems and innovative environment friendly to all participants in the value chain. They were also shifted accents in the implementation of the strategy from formulated tasks for greater focus on the effects of the strategies. Next to the *Strategy for the development of regions* and the *Regional innovation strategies* individual regions benefited from national programs such as the Enterprise Development Programme, National Programme of Research, Intelligent Development Operational Programms, Development of Eastern Poland Programme and others.

The development of SS by countries and regions became mandatory EU document entitled *Regional policy, contributing to smart growth in Europe* adopted in 2010. Europe 2020 programme aims at improving the conditions for innovation, research and development, promoting innovation and SS, increasing the availability and quality of information technology and removing obstacles to the development of small- and medium-sized enterprises [Camagni and Capello 2013].

## SMART SPECIALIZATIONS OF POLISH REGIONS FOR THE YEARS 2014–2020

In Poland, smart specializations became the leitmotif to develop a strategy for development in the plane of innovation in the financial perspective for 2014–2020. For the development of such a strategy tended formal and legal conditions for obtaining EU funds for regional development objectives. Poland, however, did not adopt uniform national rules to develop a selection strategy and implementation of SS. Hence it is observed a great variety of methodological approaches, scope of content and method of defining smart regional specialization. In the absence of central coordination of the region, having the freedom, they submit inconsistent development and often poorly substantiated. One of the main weaknesses was often imprecise definition of IS in nature and scope, making it difficult to attempt evaluation and comparison between regions. It is also apparent lack of a clear consideration to the potential strengths of each province and links with other regions [Godlewska 2013]. The individual regions can benefit from the EU recommendations contained in the RIS3, which proposed the approach containing the following six elements of the strategy:

- Analysis of the regional context and capacity for innovation.
- Establishing a strong governance structure involving different stakeholders.
- Developing a common vision for the future of the region.
- Selecting a limited number of priorities of regional development.
- Preparing an appropriate pledge of policies and development programs.
- Establishment of appropriate mechanisms for monitoring and evaluation.

In formulating smart specialization by regions some help from the national level could be a National Research Programme adopted in 2012. Containing assumptions of science and technology policy and innovation policy, in which were adopted seven priority research areas: new technologies in the field of energy; civilization diseases; new drugs and regenerative medicine; advanced information technology, telecommunications and mechatronics; modern materials technologies; environment, agriculture and forestry; socio-economic development of Poland under globalized markets; security and defense of the state [Nowak 2014]. The study *Industry technology foresight in Poland – in sight 2030* was also helpful in determining the SS in the regions. Its results were published in 2011. This prognostic study indicated six groups of key technologies for the development of industry in Poland. These included: advanced manufacturing systems, information and telecommunications technology, industrial biotechnologies, nanotechnologies, micro-electronics, photonics. At the central level with delay was accepted the development of the *National strategy for smart specialization*, which entered the stage of inter-ministerial consultations in 2014.

Poland has aligned itself to the measures taken in the European Union initiatives to accelerate economic growth by knowledge based economy, innovation implementation and application of modern technologies leading to raise the level of competitiveness. Both at national and regional levels have been initiated actions related to the choice of smart specialization identified as a way of achieving national and regional development goals. However, uncertainty remains whether the choice of SS in the regions is treated as a real



opportunity to accelerate the development or as reparation to the formal requirement to have adequate strategic documents necessary for obtaining EU funds.

Due to the lack of central coordination regional SS are highly varied in form, content, the method used to develop and suitability for use in the real regional policy. All this make it difficult to compare and assess in substantive and formal way. Some of the region did not avoid a sectoral approach to the selection of SS because of the difficulty in discovering the areas of entrepreneurship, which should focus on IS or general purpose technologies, within which should be sought strengths and capabilities of regions (domains), on which actions should be focused.

Like the national strategy falls within the general framework proposed by the EU's guide RIS3, so also SS of regions in Poland generally do not go beyond the framework set by the EU strategy and the strategy of the central level. At the same time it can be concluded that national and regional IS do not cover all the conditions imposed by the European Commission. Smart specialization of regions in Poland have a tendency to adopt follow strategies of the leading regions and tap the specialization areas of modern high technologies and advanced innovation processes. It is difficult to assess how these ambitious arrangements are realistic and attainable.

Among elected by the regions SS often come specializations within the medicine and health services, information and communication technology, biotechnology and the bio-economy, energy, including renewable energy, engineering and environmental protection. Quite often they pointed to the chemical and pharmaceutical technology, logistics, quality of life and various forms of industrial and materials science. Less common are specializations in the field of construction, social services, maritime and water technologies.

It seems that the weakness of developed strategies for the implementation of SS in Polish regions is the lack of or poorly functioning institutions that can initiate or take over implementing them in practice and poor cooperation between stakeholders in the innovation process. They show up at the shortcomings of social capital in local systems and sub-regions. To ensure the success of SS strategies for the regions it is also necessary to activate the activity of local governments, providing incentives and economic support, professionalisation of participants in the innovation processes and social support systems of local and regional authorities. Smart specialization of regions have become a necessity not only for pragmatic reasons when applying for EU funds for the implementation of development projects, but also because of the possibility of creating real opportunities for a better use of existing potential and accelerate the development of the region and increase its competitiveness in national and international scale.

## **CONCLUSIONS**

- The smart specialization of regions is a new concept, after not successful implementation of Lisbon Strategy, for establishing the knowledge based economies and implementation of innovation processes as a base for economic growth.
- The smart specializations in Polish regions prepared with the use of different methods are highly differentiated according to their contents and numbers of selected speciali-

zations. They play different roles in development strategies of regions. In most cases they are closely linked with programmes of national smart specializations.

- The smart specialization of regions are in most cases strongly linked with programmes for innovation creation and implementation in enterprises and regions.
- Programmes for smart specialization and their implementation in regions are both; a routine reaction of the EU and member countries in looking for development strategies and a new chance for real reconstruction of standard strategies in the regions. These strategies create also possibility for showing the importance of regional governments as the coordinating organs for development programmes in the regions.

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## INTELIGENTNE SPECJALIZACJE JAKO SPOSÓB WZMACNIANIA POTENCJAŁU INNOWACYJNEGO REGIONÓW

**Streszczenie.** Przedmiotem pracy jest koncepcja inteligentnych specjalizacji przyjęta w Unii Europejskiej w 2010 roku, a zwłaszcza jej wdrożenie w Polsce. Celem pracy jest określenie i zaprezentowanie koncepcji inteligentnej specjalizacji oraz przesłanek do jej ustanowienia, a także określenie roli tej koncepcji jako narzędzia wzmocnienia innowacyjnego potencjału regionów w Polsce. Materiał zaczerpnięto z dokumentów Unii Europejskiej oraz przyjętych przez polskie samorządy regionalne strategii opracowanych na lata 2014–2020. W pracy przedstawiono genezę, podstawy teoretyczne i istotę koncepcji inteligentnych specjalizacji, omówiono rolę inteligentnych specjalizacji w kreowaniu strategii i polityk rozwojowych oraz we wzmocnianiu potencjału innowacyjnego krajów i regionów oraz proponowane przez polskie regiony inteligentne specjalizacje na lata 2014–2020. Programy inteligentnych specjalizacji w Polsce są z jednej strony reakcją na możliwości pozyskania środków finansowych z Unii Europejskiej, z drugiej zaś nową szansą na rzeczywistą rekonstrukcję standardowych strategii rozwoju regionów.

**Słowa kluczowe:** inteligentne specjalizacje, strategia rozwoju, rozwój regionalny i innowacyjność

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