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## **ROLE OF SPECIALIST OBSERVATORIES IN REGIONAL INNOVATIVE DEVELOPMENT**

### **Key words**

Specialist observatory, RIS, innovation transfer.

### **Abstract**

The article presents the concept of the creation and functioning of the Regional Network of Specialist Observatory in Silesia. The Regional Network of Specialist Observatory plays an important role in the implementation and realization of the Regional Innovation Strategy, as it combines research, economic, and administrative activity, which are present in a region by set of methods and tools developed within solutions that are used to facilitate the identification, description, and assessment of the technological potential in the region and improve the transfer of innovative technological solutions that are responding to the real needs of the market. The aims of Regional Network of Specialist Observatory are as follows: the support and improvement of the management of the region's development in areas of regional potential of science and technology, the positioning of key technology areas, and the assessment of the effectiveness of measures aimed at creating a regional technology development policy of Silesia strengthening of regional.

## **Introduction**

Innovative development of a region is primarily based on collaboration between science, economy, and administration. This development, stimulated by a number of supporting instruments, is effective when it leads to an increase in the competitive potential of the region. Regional potential has become a new source of smart specialization options for the new innovation strategies that have instruments of support developed and implemented specifically for them. The choice of smart specialization is a difficult and complex decision-making process that should ultimately indicate which sectors of the economy and related areas of science should be supported and developed. Proper identification and a good choice of smart specialization requires decision-makers to use the evidence base included in the official statistics and the comprehensive process of entrepreneurial discovery, which allow for correct interpretation of changes in the economy of the region. Specialized observatories play an important role in the process of monitoring and data acquisition relating to changes in the economy of the region. The article presents the experience of the Regional Network of Specialist Observers in the region of Silesia, based on the example of the Technologies for Environmental Protection Observatory.

### **1. The importance of information in the innovative development of regions**

The impact of innovation on the development and competitiveness of enterprises and regions results in a need to find efficient and effective methods, as well as tools for the monitoring and evaluation of the direction of changes in different areas of economy and science. These activities contribute to the decision-making on strategic and operational development policies, such as defining the innovation policy not only of a general nature, but also in detail, as related to specific areas of technology that can be, if correctly supported, crucial for regional development [1]. Formation of such policies requires timely information and knowledge on development potentials and the directions of changes in the areas of technology, which is difficult to acquire in connection with the occurrence of complex relationships and interactions between different agents and institutions [2].

Information management systems are subject to constant evolution and transformation. These processes are conditioned by the need to adapt to changing user requirements and capabilities, as well as tools which allow one to acquire, accumulate and process information. Currently, the form in which the user is given information is more important than information based on full resource data. Technological development, especially in information technologies, is of crucial importance in this field so that information is faster, more accurately processed and addressed. Creating a competitive advantage

based on information resources is a result of a change in thinking and expectations of companies, customers, and the scientific community. Information is the basis for making strategic measures at different levels of management [3].

Specialist observatories created in Europe, whose task is ongoing monitoring and evaluation of occurring phenomena, as well as the identification of technology trends that give a competitive advantage are an appropriate instrument for the purpose of building knowledge on technological development in the region [4]. Establishing and operation of the Regional Network of Specialist Observatories is of multi-dimensional importance to the development of a region and a country. Identification and assessment of the endogenous potential of a region in the areas of technological development and innovation is regarded as the most important task, which is carried out based on the data collected directly from the entities and institutions involved in the building of this potential. Activities of those observatories are in line with the concept of regional development focused on finding and strengthening areas of advantages and niches of development within the framework of smart specialization [5]. In the long term, it seems necessary to incorporate those observatories in the system of the strategic management of the region and give them the rank of units influencing decisions related to business development policies. This is due to the specific mission of the observatories, acting as centres of research and analysis, whose work for the region should strengthen its powers in the field of development policy and in the creation of a regional think-tank [6].

## **2. The concept of a network of observatories**

The creation of the Regional Network of Specialist Observatories in the region of Silesia was a response to the needs of the region in terms of creating a modern tool for monitoring the effects of the pro-technological development of the region in various technological areas identified in the Technology Development Program of Silesia for the years 2010–2020 (abbreviated as "PRT"), which is a component of the Regional Innovation Strategy [7]. It is planned that the network of observatories will focus on the following [8]:

- Collecting and processing expertise in technological areas identified by the PRT,
- Monitoring technology and economic trends, and
- An assessment of the endogenous technological potential of the Silesian region.

The network is implemented within the framework of the Innobserver Silesia Platform and it was initiated by the project called "The Regional Network of Specialist Observatories". The goals of the Network include the

development of the economic potential of the region by building a competitive advantage based on cooperation and the flow of the effects of the implementation of the Regional Innovation Strategy of Silesia among the actors of the eco-innovation system. The establishment and functioning of the network of observatories is a response to the needs of the region in the creation and operation of a modern tool for monitoring the effects of pro-technological development of the region in different technological areas. Four Observatories, associated - among other things - with selected regional areas of smart specialization, i.e. technology for energy, information and telecommunication, medicine and, additionally, observatory of technologies for environmental protection, were created in the initial phase of the network development in the region. The Regional Network of Specialist Observatories is designed to be an open structure. Ultimately, the observatories are assumed to fully cover the areas shown in the PRT.

The functioning of the Network by placing it in the structure of relationships with both the Regional Observatory (ROT) and other initiatives at national level results in the stimulation of various forms of cooperation and contributes to the integration of economic, innovative, and scientific research centres, regional authorities, and decision-makers responsible for the formulation and implementation of the development policy (Fig. 1.).

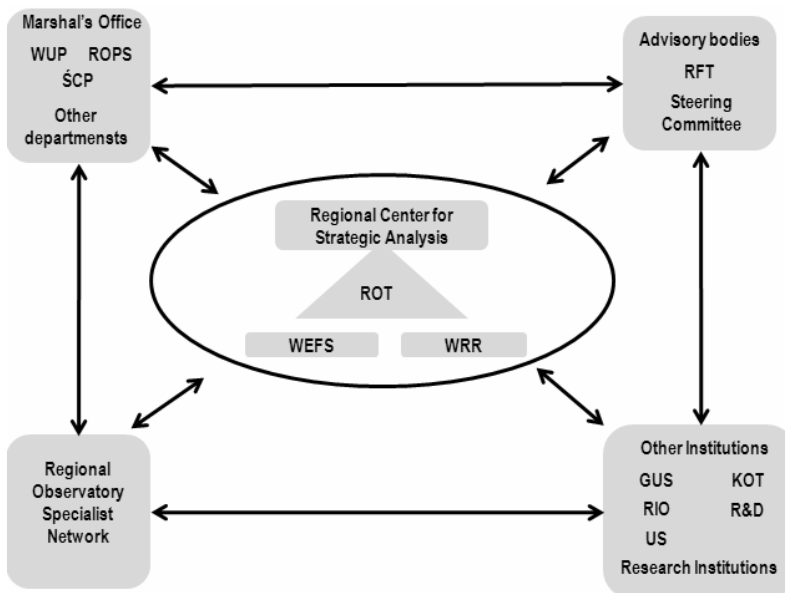


Fig. 1. Regional Observatory Specialist Network as a part of Regional Information Exchange Network [8]

There are a number of institutions subordinate to the Marshal's Office of Silesia, such as the Regional Labour Office (WUP), the Regional Observatory of Social Policy of the Silesian Region (ROPS), or the Silesian Centre for Entrepreneurship (SCP) co-creating the Regional Network of Information Exchange. The activities of the Regional Observatory are supported by the data resources of the National Observatory (KOT), the Central Statistical Office (GUS), the Regional Audit Office (RIO), tax offices (US), as well as other entities, including research centres. Ultimately, a regional information exchange network, acting as a system of collecting and processing knowledge and information for the region of Silesia, including the Regional Forum (RFT) and the Steering Committees, is to be the initiator of key projects for the region of Silesia, such as the “flagship projects,” and the Regional Network of Specialist Observatories will become a tool for monitoring indexes to compare and evaluate the effectiveness of policies that support innovation at the regional level. The Regional Network of Specialist Observatories will also enable an assessment of the advisability of spending measures within the 2014-2020 programming schedule. Thus, the observatories should ultimately constitute an important element of the verification and evaluation of the implementation of development policy within the designated regional specializations. Information collected and made available on the Internet today is derived from the analysis of the data contained in official statistics, the ongoing process of questionnaires, and specially developed technological audit tools for the R&D industry and enterprises. The Observatories also play an important role in updating technology areas and processes of entrepreneurial discovery in the region.

### **3. The activities of the Technologies for Environmental Protection Observatory in Silesia**

The Silesian region is heavily industrialized, where traces of human activity had a strong impact on the environment and human health. Improvement of the environment occurs gradually, and the key is to put the region on the path of sustainable development. In this regard, it is particularly important to create conditions for the development of innovative technologies in the field of environmental protection. Creating conditions for the development is one of the main objectives of the Technologies for Environmental Protection Observatory. Activities of the Observatory are in line with the priorities identified in the Regional Development Strategy of Silesia [9], namely the following:

- The development of competencies and services of the information society and dissemination of environmental information, which is associated with an increase in environmental awareness as well as improving the efficiency and quality of environmental management;

- The modernization of technology within the conventional industries and development and implementation of innovative technologies, which will contribute to the reduction of human pressure;
- The creation of criteria for the analysis of the environmental impact of potential investments, which will comply with the principles of sustainable development; and,
- Environmentally friendly technologies in the energy sector, which, being smart specialization of the region, is the driving force for a variety of eco-innovative solutions, in particular the use of RES.

Technological innovations in the field of environmental protection are therefore an important factor in the improvement of highly degraded Silesian region and in the protection of non-degraded areas against various threats. As part of the observatory, it was established that the purpose of technological development in the region of Silesia is to ensure a high level of environmental protection by meeting the rigorous standards for air quality (Directive 2008/50/EC), quality of surface and groundwater (Directive 2000/60 /EC), handling of waste (Directive 2008/98/EC) and noise emissions into the environment (Directive 2000/14/EC). In the context of the guidance for key directions of technological development, those actions were as follows:

- Processing technologies (purification and separation) of water and gas collection and the treatment of water;
- Digital simulation of physical, chemical, and biotechnological processes in environmental protection;
- Recording techniques and the evaluation of environmental hazards;
- Protection technologies and environmental restoration, including biogeochemical engineering and waste management;
- Management technologies for industrial and hazardous waste; and,
- Intelligent building technologies and energy-efficient techniques in terms of sustainable development.

The development of technologies for environmental protection is the key element of the strategic planning for the economic development of the region of Silesia. It should be considered both in the context of the requirements of the current financial perspective of the EU and, more widely, from the point of view of the implementation of sustainable development policies. Creating a coherent policy research and implementation of innovation and ongoing coordination of technological development necessitates the creation of effective tools for monitoring the state of technological development in this area, which include the following:

- The support and improvement of the management of regional development in terms of the potential of the regional scientific and the technological positioning of key technology areas and the assessment of the effectiveness of measures aimed at creating a regional policy of pro-technological development in the region of Silesia and the strengthening of regional specialization;
- Strengthening the adaptive potential of the region, regional market research services, and human resources by building regional relationships within the R&D sector, business environment institutions and regional authorities;
- The co-creation of a regional network of knowledge and competence;
- The verification of the choices of smart specialization; and,
- The intensification of the process of the transfer and commercialization of knowledge.

Within the framework of the Observatory, a diagnosis of the endogenous potential of the region was conducted, which was supplemented by expert interviews. On this basis, we formulated a list of 11 determinant technologies for environmental protection influencing the development of the area, i.e. [10]:

- 1) The emergence and development of new markets for environmental technologies;
- 2) New business models and the intensification of networking;
- 3) Integration of information technologies and their impact on the environment;
- 4) Stimulating environmental policy;
- 5) Inter-regionalization, internationalization, and cooperation;
- 6) The development of sanctions for failure to comply with national and international legislation;
- 7) Reducing the cost of patent protection;
- 8) The transparency of structures in value chains;
- 9) The provision of personnel for the innovative development;
- 10) The development of a coherent strategy for technological development; and,
- 11) The promotion of a system of financing to support the development of technologies.

The Delphi method was used to assess the validity of the determinants in the development of technologies for environmental protection in the context of the regional development. Experts pointed out that the factors associated with the opening of new markets and uses of technologies for the protection of the environment are the most important for the development of innovation in the area of technologies for environmental protection, which confirms that it is

necessary to intensify the flow of information on the state of development of this technology group in the region, especially between the R&D sphere, the economy, and the development of instruments for stimulating development in this area.

On one hand, the research work carried out by the Observatory confirms that our guidelines for the technological development are correctly assumed. On the other hand, creating a bridge between the sphere of science and the economy provides space for new solutions. Activities of the research centres and companies in the region identified as development and implementation of new technologies are primarily focused on revitalization and reclamation of degraded areas and protection of the environment. Intensification of efforts to develop technologies for environmental protection is in line with the trend of sustainable development and use of eco-innovation as a source of development of competitive advantages.

## **Conclusions**

The considerations presented in the article lead to the following conclusions:

- Development policy based on smart specialization requires elaboration of new monitoring tools, which are based on evidence.
- The Regional Network of Specialist Observatories is one of many instruments for monitoring technological development in the region. Expansion of the network allows one to observe and record changes in the areas of science and business in selected areas of technology, and it is one of the sources for detailed diagnosis of the effectiveness of development activities, including the effectiveness of the instruments of support grants for the R&D sector, verified by evaluating the quantified results.
- The functioning of the Observatories plays a particularly important role in gathering timely and more complete information about the technological potential of the region, making planning, and management of development policies more effective. It also influences the formation of real competitive advantages.
- The network of Observatories could also influence the creation of local innovation systems in local governments and/or the development and implementation of methodologies for assessing the effectiveness of the implementation of regional policies.
- The Technologies for the Environment Observatory is an additional source of information about the development of environmental technologies at the international level and works with businesses and research institutions in applying for national and international projects.



- The activity of the Observatory is an important contribution to the creation of innovative development schemes of the region, especially within the area of smart specialization.

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## **Rola obserwatoriów specjalistycznych w innowacyjnym rozwoju regionu**

### **Słowa kluczowe**

Obserwatorium specjalistyczne, RIS, transfer innowacji, inteligentne specjalizacje.

### **Streszczenie**

Artykuł prezentuje koncepcję utworzenia i funkcjonowanie sieci regionalnych obserwatoriów specjalistycznych w województwie śląskim. Regionalna Sieć Obserwatoriów Specjalistycznych odgrywa istotną rolę w realizacji Regionalnej Strategii Innowacji, gdyż łączy sfery badawczą, gospodarczą i administracyjną poprzez zestaw wypracowanych w ramach jej działalności rozwiązań. Metody i narzędzia, jakimi posługują się obserwatoria, mają przede wszystkim ułatwić identyfikację, opis i ocenę potencjału technologicznego regionu i usprawnić transfer innowacyjnych rozwiązań technologicznych, które są odpowiedzią na realne potrzeby rynku. W artykule zaprezentowano szczegółowy zakres funkcjonowania Obserwatorium – Technologie dla Ochrony Środowiska.