

Regional Innovation Strategy— from Design to Implementation. Lubelskie Voivodship Case Study

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Abstract

The objective of the article is to present the process of designing and implementing Regional Research and Innovation Strategy for Smart Specialisation (RIS3). The paper is composed of two parts. The first part presents the idea of Smart specialization and its implementation in the current programming period, as well as the legal basis, premises, and assumptions of development of RIS3. In the second part, in the context of endogenous potentials, competitive advantages, and level of competitiveness of the region, the process of development of Regional Innovation Strategy for the Lubelskie Voivodship 2020 is presented in practice from the stage of identification of the areas of regional smart specialization in the entrepreneurial discovery process, through defining goals, priorities, and directions of measures and determination of the implementation assumptions, to the specification of financing sources. In the context of financing, the assumptions of the strategy were confronted with the provisions of the Regional Operational Programme of the Lubelskie Voivodship 2014–2020. This permitted drawing conclusions regarding financing pro-innovation measures on the regional level. In comparison to the assumptions of Regional Innovation Strategy for the Lubelskie Voivodship 2020 a considerable increase of resources in the scope of the Priority Axis 3 aiming at the improvement of competitiveness of SMEs was recorded. The cognitive value of the article is the presentation, in a broader context, of the methodology of development of RIS3 of the Lubelskie Voivodship, and translation of provisions of the strategy into specific measures in the financial sphere.

Keywords: Regional Innovation Strategy (RIS3), Regional Smart Specializations, entrepreneurial discovery process, Cohesion Policy 2014–2020, Regional Operational Programme, Lubelskie Voivodship

JEL: R11, R51, R58, O38

Introduction

The search for the answer to the question of how to increase competitiveness of the European economy in view of the global crisis and prepare countries for a new financial perspective has become one of the most important challenges faced by the European Union at the end of the 1st decade of the 21st century. The contemporary postulates of orienting the development policy at support of endogenous potentials of the country/region and territorialization of interventions (Barca 2009; Barca, McCann, and Rodríguez-Pose 2012), as well as building European competitiveness of the economy based on knowledge and innovation (Foray, David, and Hall 2009; Foray and Van Ark 2007)¹ are reflected in the key EU document—i.e., “Europe 2020” strategy which determined new directions of development of EU Member States in the new decade.²

1. See also: Globalization of R&D: Linking Better the European Economy to „Foreign” Sources of Knowledge and Making EU a More Attractive Place for R&D Investment. Report by D. Foray, Experts Group „Knowledge of Growth”, 4 April 2006, [at:] https://infoscience.epfl.ch/record/87453/files/globalization_r_d_expert_group_foray.pdf

2. See: EUROPE 2020. A Strategy for Smart, Sustainable and Inclusive Growth. COM(2010)2020 final, Communication from the Commission, Brussels, 3.3.2010, [at:] <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC2020&from=EN>.

A consequence of the adopted programming documents is among others a far-reaching change of the paradigm of building an innovative economy, reflected in shifting the emphasis from strengthening cohesion to support for the competitiveness of the economy of the EU, and the necessity of directing innovative policy intervention in accordance with the place-based approach. The implementation of the goal in the current perspective is supported by a new tool of the cohesion policy, namely smart specialization, aimed at comprehensive support of research and development in the scope of implementation of the provisions of the “Europe 2020” in component “smart growth” (Kardas 2011; Kociuba 2016; McCann and Ortega-Argilés 2015; Nowakowska 2015; Słodowa-Hełpa 2013). Innovation policies traditionally devoted to achieving “smart growth,” inevitably investing mainly in strong areas, have been recently forced to move away from the previous conceptualization in favor of differentiated smart specialization strategies (RIS3) tailored to regional specificities (McCann and Ortega-Argilés 2014). Therefore, the designation of regional specialization (identified as smart specialization) and development of smart specialization strategies creating synergies between indices of EU policies and financing of activities and investments in the area of R&D+I have become the key issue for EU countries and regions (Foray 2015).

The objective of the article is to present the role of RIS3 in the EU Cohesion Policy 2014–2020. The first part presents the idea of smart specialization and its implementation in the current programming period, as well as the legal basis and premises of development of RIS3. The second part has a practical character, and concerns the Lubelskie Voivodship. The economy and level of competitiveness of the region was first characterized as a background for a detailed analysis of the issue of preparation of the “Regional Innovation Strategy for the Lubelskie Voivodship 2020,”³ from the identification of a smart specialization in the entrepreneurial discovery process, through planned implementation, to financing activities as an example of good practice in the scope. Finally, a comparison is presented of the financial assumptions of the implementation of RIS3 resulting from the content of the document with the provisions of the “Regional Operational Programme of the Lubelskie Voivodship 2014–2020,”⁴ and divergences are revealed between the theory and practice of financing of pro-innovation priorities and activities at the regional level.

1 Regional Smart specialization in the EU Cohesion Policy 2014–2020

The concept of smart specialization was developed by a group of experts working within the Knowledge for Growth expert group (K4G), established in 2005 by Janez Potočnik, the European Commissioner for Research. The team diagnosed the weakening position of the EU in terms of competitiveness of R&D works.⁵ The work of the team resulted in the development of the concept of smart specialization assumed to be “both an idea and a tool to help regions or countries to answer this critical question about their respective (and unique) positions in the knowledge economy” (Foray, David, and Hall 2009). The idea was based on two premises:

- acceleration of the agglomeration processes in order to avoid further duplicating of regional investments and investments in research development of technologies
- enticement of regional players, and particularly regional authorities, for “generating and stimulating the growth of new exploration and research activities, which are related to existing productive structures and show the potential to transform those structures” (Foray 2015) to make them more innovative and generate more added value.

In the programming period 2014–2020, the European Commission made the concept of smart specialization one of the most important investment tool of its new Cohesion Policy. According to

3. Further referred to as: RIS3 LV. See: Regional Innovation Strategy for the Lubelskie Voivodship 2020. By S. Sosnowski et al., Urząd Marszałkowski Województwa Lubelskiego, Lublin 2014, [@:] http://www.rsi.lubelskie.pl/images/Regional_Innovation_Strategy_of_Lubelskie_Voivodeship_2020.pdf.

4. Further referred to as: ROP LV. See: Regionalny Program Operacyjny Województwa Lubelskiego na lata 2014–2020 (przyjęty decyzją Komisji Europejskiej C(2015)887 z dnia 12 lutego 2015 r.), [@:] <http://www.npf.rpo.lubelskie.pl/widget/file/get/1426769848305998.pdf/Projekt%2BRegionalnego%2BProgramu%2BOperacyjnego%2BWojew%25C3%25B3dztwa%2BLubelskiego%2Bna%2Blata%2B2014-2020%2B%255Bwer.%2Bpo%2Bakceptacji%2BKE%255D/>.

5. See: Globalization of R&D: Linking Better..., op. cit.

“Europe 2020” strategy,⁶ investing more in research, innovation, and entrepreneurship is one of the pillars of EU development and a way to improve Europe’s competitiveness in the world’s knowledge-based economy. As a part of the “Europe 2020,” the Commission adopted the “Innovation Union” flagship initiative of key importance for the identification and development of the areas of smart specializations.⁷ The document stipulates that the Member States will have to reform the national and regional systems of conducting R&D and innovation activity to make them favorable for the development of smart specialization, and promote expenditures for knowledge and innovations, as well as increase the scale of private investments in the R&D sphere.

The legal basis for the introduction of the smart specialization at EU level is determined by three Regulations of the European Parliament and the EU Council of 17 December 2013 (i.e., No 1301/2013, No 1303/2013, and No 1304/2013).⁸ Within the new Cohesion Policy, smart specialization has been proposed as an “ex-ante conditionality.” Therefore, EU Member States and regions (NUTS 2) must have RIS3 strategies in place before their Operational Programmes supporting these investments are approved.⁹ RIS3 will identify the areas of smart specialization—i.e., priority sectors, or groups of sectors currently showing specialization and which have obtained a certain competitive advantage at the national and international scale. They should be the focus of support in the scope of the European Regional Development Fund (ERDF) within Thematic Objective 1 (TO1) “strengthening research, technological development and innovation” (TO specified in the regulations), as well as TO2 enhancing access to and use of quality of ICT and TO3 aimed at an increase in competitiveness of small and medium-sized enterprises (SMEs)—i.e., TO aimed at the implementation of the “smart growth” component of the “Europe 2020” strategy.

Therefore, in the current perspective 2014–2020, smart specialization aims on the one hand at activating and strengthening endogenous potentials, including those based on knowledge and innovation, and on the other hand at contributing to the territorialization of interventions for the purpose of obtaining competitive advantages of regions. The primary tools of implementation of such assumptions are Research and Innovation Strategies for Smart Specialization (RIS3).

2 RIS3—legal basis and policy, rational context

“Smart specialization strategy” is defined by Regulation (EU) 1303/2013 of the European Parliament and of the Council of 17 December 2013. Pursuant to the article 2 in point 3 Smart specialization strategy means the national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts.

6. See: EUROPE 2020. A Strategy..., op. cit.

7. See: Europe 2020 Flagship Initiative. Innovation Union. SEC(2010) 1161. COM(2010) 546 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 6.10.2010.

8. See: Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006. OJ L 347, 20.12.2013, p. 289–302; Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006. OJ L 347, 20.12.2013, p. 320–469; Regulation (EU) No 1304/2013 of the European Parliament and of the Council of 17 December 2013 on the European Social Fund and repealing Council Regulation (EC) No 1081/2006. OJ L 347, 20.12.2013, p. 470–486.

9. See: Proposal for a Regulation of the European Parliament and of the Council laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund covered by the Common Strategic Framework and laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1083/2006. SEC(2011) 1141 final, SEC(2011) 1142 final. COM(2011) 615 final/2, 2011/0276 (COD), Brussels, 14.03.2012.

The basis for EU members for the preparation of RIS3 is the “Guide on Regional Research and Innovation Strategies for Smart Specialisation (RIS3)”¹⁰ published in 2012. The smart specialization strategy, defined in accordance with the guide, constitutes integrated programmes of economic transformation aimed at the implementation of the following assumptions:¹¹

- focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development
- build on each country/region’s strengths, competitive advantages and potential for excellence
- support technological as well as practice-based (“non-technical”) innovation (i.e., social and service innovations) and aim to stimulate private sector investment
- get stakeholders fully involved and encourage innovation and experimentation
- the strategies are to be based on facts and cover relevant systems of monitoring and assessment

The practical aspects of preparation of RIS3, pursuant to the methodology prepared in Guide RIS3, primarily include the identification of regional smart specializations. They are set based on the bottom-up entrepreneurial discovery process involving all key innovation stakeholders from the area of academics, industry, government, and community (based on the Quadruple Helix model). The identification of a smart specialization based on the examination of the region’s assets (i.e., industrial structures, clusters, universities and research institutes, science and technology potential, human capital, environment, market access, governance systems, etc.), its challenges (i.e., challenges of the labor market, ageing population, environmental aspect, etc.), competitive advantages and potential for excellence (using SWOT, foresight and trend analyses, technology mapping, cluster analysis, etc.). The designated Smart specializations are understood as areas where there is a critical mass of companies, concentration of employment and gross value added, and the existence of scientific and innovation potential. National or regional authorities must then prepare the strategy document specifying the vision, objectives, and selected priorities for the development of a given country or region. The strategy also needs to include a set of policies and programmes as well as pilot projects, consider planned public and private investments, including those from structural funds, and specify operational programmes in the scope of which financing of activities and undertakings will occur in the area of R&D&I. Moreover, it must include a description of the mechanisms of monitoring and evaluation. Works on RIS3 should be based on the Smart Specialization Platform (S3).¹²

The implementation of RIS3 aims at support of the implementation of the innovation policy through the identification of sectors and areas financing of which can ensure economic transformation and obtaining permanent competitive advantages of countries and regions in the conditions of the knowledge-based economy.

3 RIS3 in the Lubelskie Voivodship

The choice and support of Regional Smart Specializations (RIS) will be characterized in detail based on works on RIS3 in the Lubelskie Voivodship. Pursuant to the guidelines of Guide RIS3, a regional smart specialization should be adjusted to the regional context. Its identification “should take into account the “principles of regional embeddedness and relatedness.”¹³ Therefore, first the Lubelskie Voivodship will be characterized in the aspect of its endogenous potentials, competitive advantages, and level of competitiveness.

3.1 Short characteristic of the Lubelskie Voivodship potentials

The Lubelskie Voivodship is located in so-called Eastern Poland or the East Wall. It shows the lowest level of socio-economic development in Poland, belonging to the 20th of the poorest regions of

10. Further referred to as: Guide RIS3. See: Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3). By D. Foray et al., European Commission, May 2012, [@:] http://ec.europa.eu/regional_policy/sources/docgener/presenta/smart_specialisation/smart_ris3_2012.pdf.

11. See: Guide RIS3..., op. cit., page 8.

12. See: National/Regional Innovation Strategies for Smart Specialisation (RIS3). Cohesion Policy 2014–2020. European Commission, March 2014, [@:] http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_en.pdf.

13. See: Guide RIS3..., op. cit., page 14.

the EU. It is characterized by a low urbanization level and low transport accessibility. The Lubelskie Voivodship is one of the largest and most important agricultural regions of Poland (agricultural areas cover 68% of the entire region; the sector employs more than 25% of total employment in industry and generate 24% of sold production) with strong agricultural traditions. A rich supply of ecologically pure food is beneficial to the development of the food industry (the voivodship is one of the largest domestic producers of cereals, field vegetables, tree and bush fruit). The second most important branch in the region is the chemical industry which generates 13% of sold production and a nearly 6% share in employment (the flagship company is Zakłady Azotowe Puławy SA—part of the Azoty Puławy Group). Deposits of black coal (20% of the national reserves), natural gas (2,6% of the national reserves)¹⁴ and limestone (extracted mainly from the Chełm area) are the basis for the development of the third important sector of the regional economy – the mining and energy industry. Rich coal deposits provide for the possibility of an even more dynamic development of the mining sector. Two coal mines are currently in operation—e.i., KWK Bogdanka and K-2 in Stefanów owned by Lubelski Węgiel Bogdanka SA (part of the Enea Group), and two next companies the Polska Grupa Górnicza sp. z o.o. in Katowice and Prairie Downs Metals Ltd. from Australia are preparing for extraction. The natural potential of the region creates favorable conditions for the production of heat and power from biomass. The next important branches of the regional economy include manufacture of machinery and equipment and manufacture of motor vehicles, which generate 6% of sold production in industry. They have played an important role in the history of the region, but the production of agricultural tools and machines is and was predominant. The aviation industry is also well developed (the largest factory is PZL Świdnik SA—a member of the Leonardo Helicopters Group). Long-term traditions in the region are also noted in the furniture industry which generates about 6% of the sold production (the flagship company is Black Red White SA Group).¹⁵

The unfavorable structure of the regional economy translates into the lowest in the country level of industrialization (2,5% of the national contribution) and almost twice as high contribution of agriculture in creating Gross Value Added-GVA (7,4%).¹⁶ This is related to the structure of sold industrial production showing that almost 60% comes from low technology sectors (producing foods and beverages, tobacco and textile products, clothing, wood and paper products), 21% from medium-high technology (dominated by the production of chemical goods and machines and devices, and production and processing of coke), and only 2% is generated by high technology sectors (among others production of helicopters).¹⁷

The Lubelskie region has a long tradition in clustering. Cluster activities promote and develop new innovative technologies related to agriculture, including eco food (Organic Food Valley Cluster), ecoenergy, including renewable energy (Lubelski Eco-Energy Cluster), aviation (Aviation Valley), as well as ICT (Eastern Cluster ICT). The Lubelskie Voivodship is an important international academic center. It includes 97 research institutions, including 37 centers which operate in the public sector (universities, research institutions), and 60 in the commercial sector.¹⁸ The research potential is concentrated in Lublin (5 public universities, 2 public research institutes, 6 private high schools) and Puławy (5 public research institutes, including the largest in Poland Institute of Soil Science and Plant Cultivation—State Research Institute).

The Lubelskie region is among regions with a low level of innovativeness. According to the “Regional Innovation Scoreboard 2016,”¹⁹ the Lubelskie Voivodship was qualified within the group of “modest innovators” (i.e., EU regions with the lowest innovativeness index). It should be emphasized that the position of the region deteriorated in comparison to 2010 when it was classified within the

14. [In the journal European practice of number notation is followed—for example, 36 333,33 (European style) = 36 333.33 (Canadian style) = 36,333.33 (US and British style).—Ed.]

15. See: RIS3 LV, pages 20–22.

16. See: RIS3 LV, page 8.

17. See: Detailed Diagnosis of the Innovation Potential of the Lubelskie Voivodship. Annex No 1 for RIS3 LV, pages 15–16.

18. See: RIS3 LV, page 23.

19. See: <https://publications.europa.eu/en/publication-detail/-/publication/693eaaba-de16-11e6-ad7c-01aa75ed71a1/language-en/format-PDF/source-31233711>.

group of Moderate Innovators.²⁰ This particularly results from a low — at a level of 19,8% — degree of cooperation between the scientific sphere and enterprises. The contribution of the R&D sector in the development of the innovativeness of the economy is also relatively low. This partially results from focusing on basic research (56% in comparison to 23% of expenses on development works), but also from a low level of commercialization of effects of research. This translates to a low value of expenditures for R&D in comparison to GDP — in 2010 it was 0,67% GDP (compared to the Mazowieckie Voivodship 1,35%) This value considerably deviates from that determined for Poland (1,7% GDP) and the objective assumed by the EU by 2020 (3% GDP). Employment in the R&D sector is exceeding 6,8 thousand persons (8th position in the country).²¹ Strengths of the Lubelskie Voivodship include a high and diverse potential of higher education — the region takes the 1st place in Poland in terms of the number of students per inhabitants of a voivodship.²² In the context of implementation of smart specialization it is therefore necessary to change the approach to the R&D sphere through focusing on pro-market research activities and strengthening of sectors which are or have a chance of becoming the “driving forces of the economic growth” of the region in the future.

3.2 Preparation of RIS3

The “Regional Innovation Strategy for the Lubelskie Voivodship 2020” is the key strategic document supporting the development of competitive advantages of the region in the areas of entrepreneurship and innovation. Works on the strategy consider results of implementation of the binding to date RIS3 LV from 2004 (prepared in the scope of financing of the Scientific Research Committee), projects implemented in the scope of priority 2.6 under the “Integrated Regional Development Operational Programme 2004–2006,” and system projects under the “OP Human Capital 2007–2013,” among others “Support of the Regional Innovation System” (Priority VIII Human resources for regional economy, Measure 8.2 Knowledge transfer, Sub-measure 8.2.2. Regional Innovation Strategies).

Works on RIS3 LV involved the participation of various socio-economic environments. For the purpose of increasing the efficiency of works, new governing structures were appointed. On the part of the Marshall's Office, the main decision-making body is the Board of the Region, and decision-making and executive body — the Steering Committee of RIS3 LV. The Lubelskie Centre for Innovation Research (LCIR), established at the Department of Economy and Innovation (currently Department of Economy and Foreign Cooperation), is responsible for the preparation, implementation, monitoring, evaluation, and updating of RIS3 LV.²³ Its implementation also involves the appointment and coordination of works of the Lubelskie Council for Innovation. The Council is an advisory and opinion-making body in the scope of the innovation policy in the region. It is composed of representatives of all stakeholders providing activity in the Quadruple helix model. RIS3 LV was developed in accordance with the methodology presented in the Guide RIS3.

3.2.1 Identification of regional smart specialization areas

The identification of smart specialization areas was based on the bottom up entrepreneurial discovery process promoted by the European Commission, combined with the self-assessment of economic,

20. This suggests that funds allocated for support of R&D and innovation in the perspective 2007–2013 in the framework of regional, inter-regional and national operational programmes did not contribute to an increase in innovativeness in the region, and in extreme cases in the years 2009–2011 in comparison to 2004–2006, a decrease occurred in the contribution of innovative companies. Weak effects were also brought by the development of the scientific research infrastructure of companies and institutions financed in the framework of OP Development of Eastern Poland due to the lack of its adjustment to the needs of the regional economy, or even lack of staff for operation of specialised equipment (RIS3 LV, page 39).

21. See: Detailed Diagnosis..., op. cit., pages 25–26.

22. See: RIS3 LV, page 24.

23. LCIR is also responsible for the implementation and support of projects supporting the implementation of objectives included in the RIS3 LV and cooperation with stakeholders in the scope of the Regional Innovation System, as well as collection of information on the state of innovativeness and its effect on the competitiveness of the region's economy and promotion of innovative solutions.

scientific, technological, educational, and institutional potential.²⁴ The identification of regional smart specializations involved three stages: analytical, conceptual, and implementation.

The process was divided into two main phases, and was implemented in 2013–2014. In the first phase, the process of identification of smart specialization was based on the actual potential, realistically adjusted to the abilities, possibilities, and needs in the region. The analyses were performed in three dimensions:

- scientific—through the indication of domains and disciplines in the areas of smart specialization (pursuant to the Regulation of the Minister of Science and Higher Education of 7 August 2011)
- educational—through the indication of human resources for educational domains on the tertiary level (pursuant to the Regulation of 2 November 2011 on National Framework of Qualifications for Higher Education)
- economic—through the indication of areas of activity of business entities according to the Polish Classification of Activity (PCA) (2007)

In the scope of the economic specialization, endogenous development potentials were identified through the analysis of the degree of concentration of sectoral and geographic business activity (in the composition of NUTS 2 and NUTS 3—4 sub-regions: Biała Podlaska, Chełm-Zamość, Lublin, and Puławy) with the application of a location quotient (LQ) based on data related to the number of entities, number of employees, and value of sold production. The analyses permitted designating complete and partial endogenous development potentials.²⁵ They provided the basis for the determination of the level and scope of specialization of the economic structure of the region (degree of rooting). The LQ analysis largely confirmed the arrangements resulting from the simultaneous analysis of the innovation potential of the Lubelskie Voivodship (based on the size structure of entities, their economic and financial results, and cluster initiatives).²⁶ The analyses permitted designating five complete economic endogenous development potentials.²⁷ An additional area of endogenous development potentials is the service sector (covering approximately 77% of all economic entities in the Lubelskie Voivodship).²⁸ Results of identification of endogenous development potentials and the areas of economic specialization are described in figure 1.

The analyses were supplemented by the identification of directions of the regional research and technology specialization. It involved the analysis of the structure of expenditures for R&D and structure of employment in R&D with the application of the participation rates indicator. The analyses showed that almost 60% of expenditures for R&D in the region is allocated to research in the scope of agricultural sciences (32% of total spending compared to 7% nationwide), life sciences, as well as medical and health sciences. 30% (compared to 49% nationwide) was dedicated to research in technical sciences. The least amount was allocated to research in social sciences and humanities. The results were reflected in the employment structure in the R&D area, especially in agricultural sciences (31% compared to 7% nationwide). Such distinguished directions of specialization were confirmed by the analysis of grants carried out by researchers from regional universities and research institutes (based on data from the OSF system and CORDIS 6–7 FP). Special emphasis is put on sciences related to agriculture and life sciences. The bibliometric analysis showed an

24. The analyses were performed based on data obtained from: Regional Innovation Scoreboard 2009 and 2012; OECD and the World Bank; Polish Agency for Enterprise Development; Central Statistical Office in Poland. Moreover, comparisons were made with other voivodships of Eastern Poland (Świętokrzyskie, Podlaskie, Podkarpackie, Warmińsko-Mazurskie) and other Polish voivodships: Śląskie, Małopolskie (transformation of economy—best practice). Results of the peer review workshop organised by the RIS3 Platform in December 2012, and analyses of RIS3 Platform materials were also used.

25. For complete sectors, at least one LQ exceeded the level of 1.25 throughout the region, and for partial sectors, at least one LQ exceeded the level of 1.25 for at least one sub-region.

26. See: Detailed Diagnosis..., op. cit., pages 14–15.

27. They are well rooted in the region, as confirmed by the provisions of the Socio-Economic Development Strategy of Eastern Poland by 2020 (see: Strategy for Socioeconomic Development of Eastern Poland until 2020, Ministry of Regional Development, Warsaw, July 2013, [@:] https://www.mr.gov.pl/media/3374/Strategy_of_Eastern_Poland_screen.pdf). Pursuant to the Strategy, rooted economic specialisations of Eastern Poland include: agriculture and food industry, production of rubber and plastic goods, production of metal goods, furniture industry, and wood industry.

28. See: RIS3 LV, page 22.

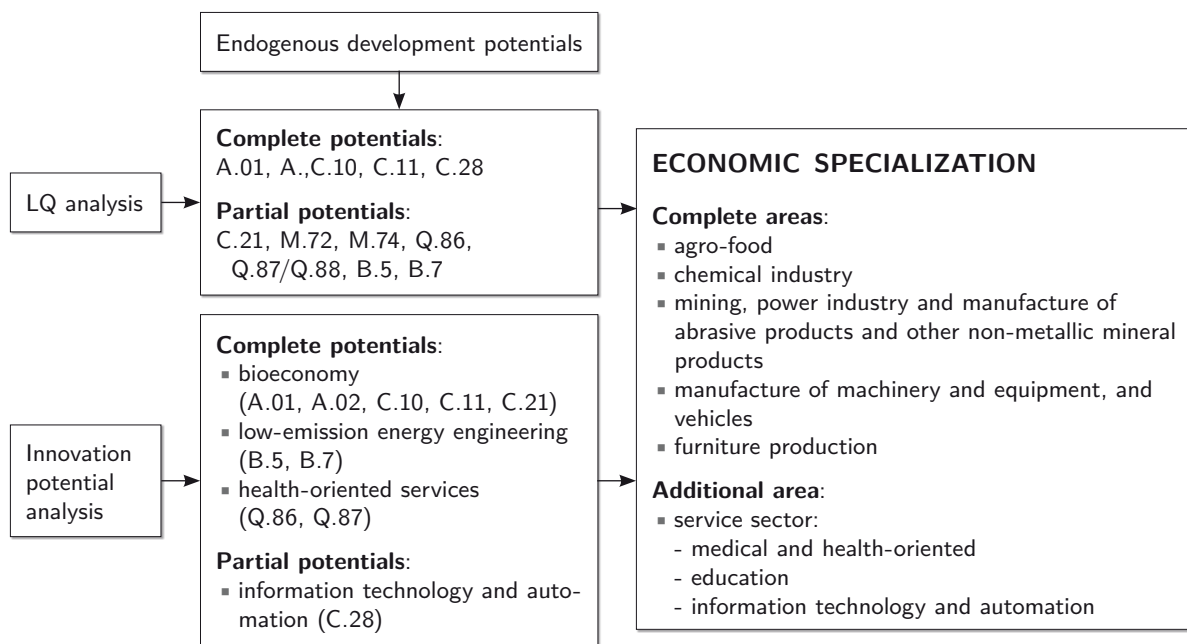


Fig. 1. Identification of the areas of economic specialization of the Lubelskie Voivodship

Source: Own study based on RIS3 LV (pages 20–22) and Detailed Diagnosis... op. cit., pages 14–15

Note: A.01 Crop and animal production, hunting and related service activities; A.02 Forestry and logging; C.10 Manufacture of food products; C.11 Manufacture of beverages; C.28 Manufacture of machinery and equipment not classified elsewhere; C.21 Manufacture of basic pharmaceutical products and medicines and other pharmaceutical products beverages; M.72 Scientific research and experimental development; M.74 Other professional, scientific and technical activity; Q.86 Healthcare; Q.87/Q.88 Residential care /without accommodation; B.5 Mining of coal and brown coal (lignite); B.7 Mining of metal ores.

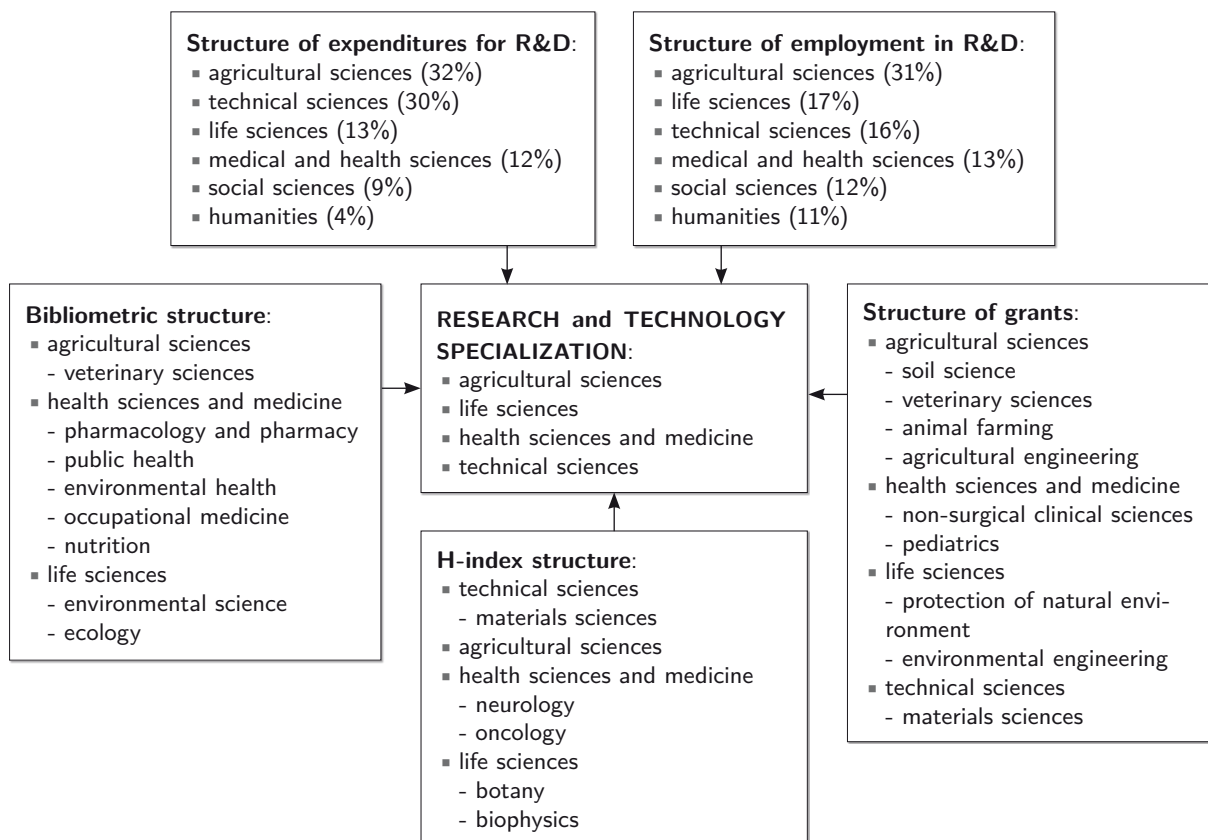


Fig. 2. Identification of the areas of research and technology specialization of the Lubelskie Voivodship

Source: Own study based on Detailed Diagnosis... op. cit., pages 25–28

evident specialization in veterinary sciences (almost every third Polish article in this field, indexed in the Web of Science, was written in the Lubelskie Voivodship). The h-index that attempts to measure both the productivity and citation impact of articles shows high specialization in: medicine (i.e., oncology—136% of national average; neurology—118%), life sciences (biophysics—117%, botany—113%), and agriculture (112%).²⁹ Results of identification of the areas of research and technology specialization are presented in figure 2.

The identification of the educational specialization involved the application of available statistical data and results of surveys of schools of higher education located in the region. The analysis concerned the variability of educational potential at the vocational and secondary level, and in the case of higher education the ratio of the number of students to the number of residents in the Lubelskie Voivodship (it is the highest in Poland and amounts to 9%), as well as the structure of university majors and number of students at particular levels of education (using participation rates). The analyses showed the weakness of the regional educational system for the specializations identified earlier (fig. 3), particularly due to the recent decline in the number of graduates of schools of higher education in mathematical, environmental, and technical majors, and low participation of human resources for science and technology (HRST) in the total population.³⁰

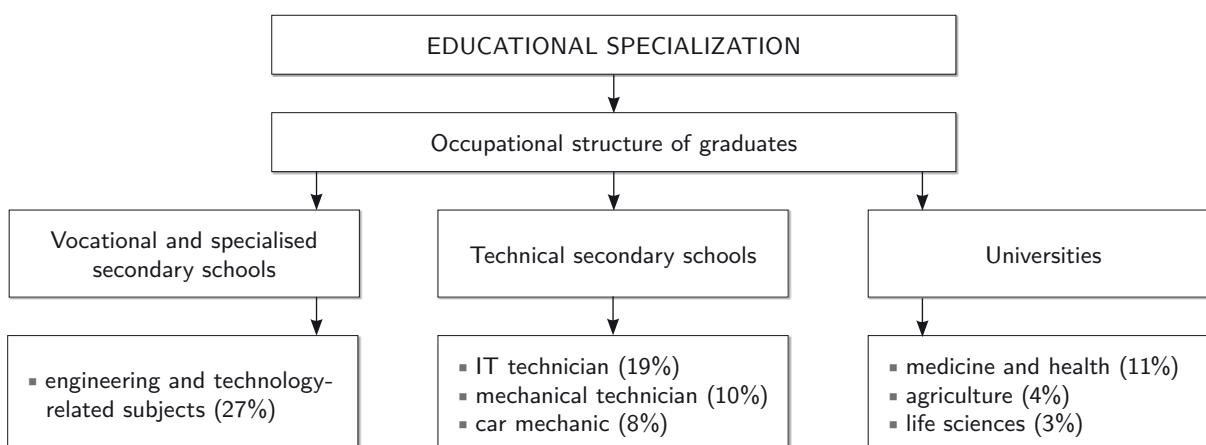


Fig. 3. Identification of the areas of educational specialization of the Lubelskie Voivodship

Source: Own study based on RIS3 LV, pages 24–25 and Detailed Diagnosis... op. cit., pages 35–37

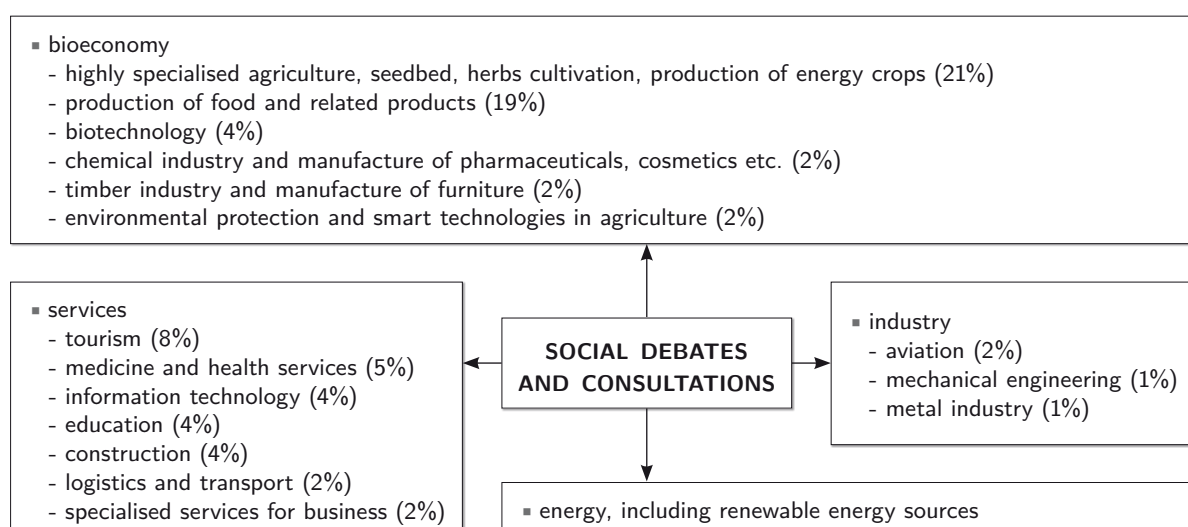


Fig. 4. Areas of regional smart specialisation emerging from the social debates and consultations

Source: Own study based on RIS3 LV, page 19

29. See: Detailed Diagnosis... op. cit., pages 25–28.

30. See: RIS3 LV, page 25.

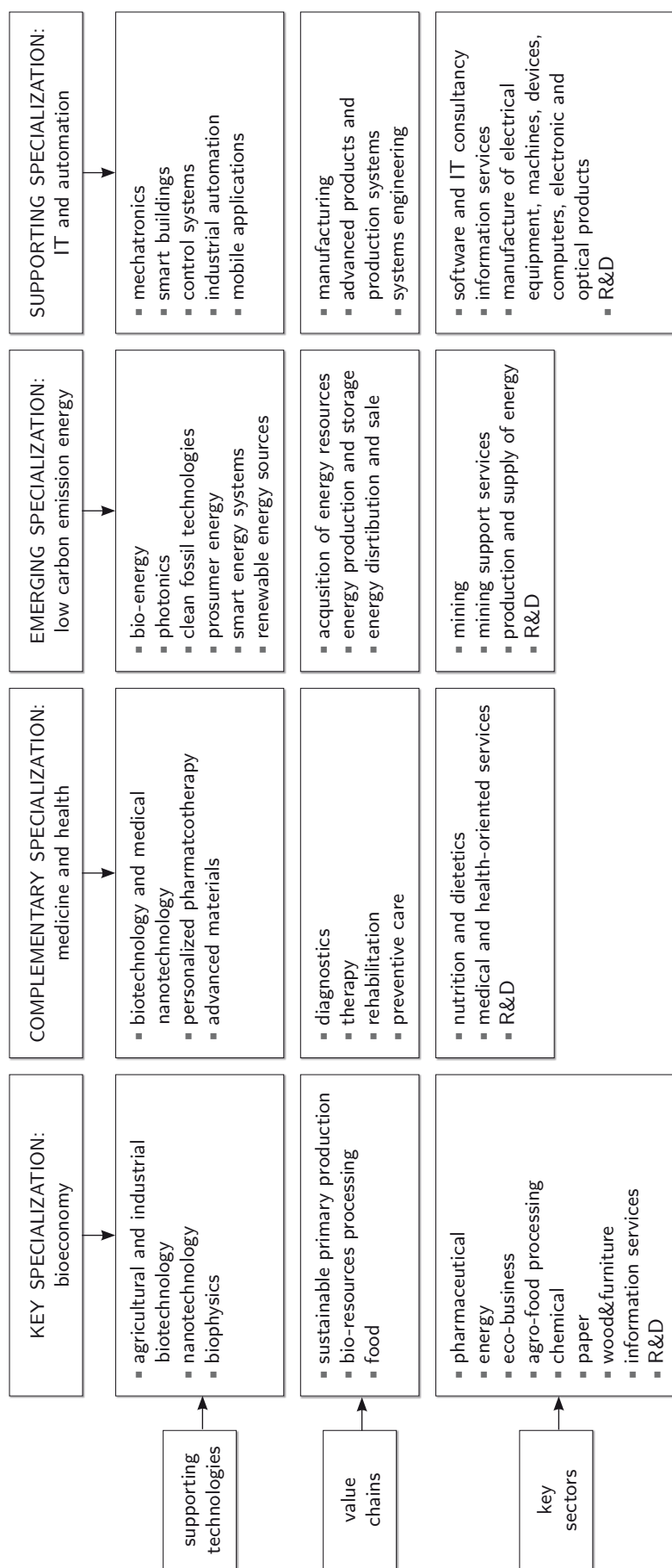


Fig. 5. Areas of regional smart specialization of the Lubelskie Voivodship

Source: Own study on the base on RIS3 LV, pages 26–28

In the second phase, the initial areas of smart specialization were subject to consultations based on the methodology of the entrepreneurial discovery process. The process took the form of debates and social consultations involving all regional stakeholders, conducted in all sub-regions. Discussions were also conducted on the forum of the Council for Innovation, specialized panels organized in the scope of two projects “Regional System for Economic Change Management” financed under the OP Human Capital 2007–2013 and “Towards Regional Specialisation for Smart Growth Spirit” (TRES) funded through the INTERREG IVC, as well as workshops dedicated to internal and external conditionality of smart specialization (organized as part of the project implemented by the Ministry of Science and Higher Education called the National Foresight Programme: Results Implementation). The debates showed that the main area of smart specialization of the Lubelskie Voivodship is the bioeconomy (half of the submitted proposals), broadly defined services (29%), as well as generating and use of energy, including renewable energy sources (11%). The lowest number of proposals concerned industry (only 4%).³¹

Imposing the matrix of economic, research and technology and educational specialization as well as the debate and public consultation led to the identification of areas of smart specialization of the Lubelskie Voivodship. They include the key specialization—bioeconomy, complementary specialization—medicine and health, emerging specialization—low emission energy engineering, and supporting specialization—information technology and automation. Their scope and mutual relations are presented in detail in figure 5.

The areas of smart specialization are complementary to each other, and cover fields of business activity specific to the economic, research, and technology specialization of the region. Moreover, the areas have already gained, and may gain in the future, a competitive advantage at a national and/or international scale; they are recognized for well-developed cluster initiatives and creation of sufficient critical mass able to create new paths of development for the region.³² The way the emergence of smart specialization in the Lubelskie Voivodship takes into account the prioritization of specializations (from the key to supporting) and indicating in each supporting technologies, value chains, and key sectors, is an example of good practice in the process of identification of regional smart specialization.

3.2.2 Vision, goal, and priorities of the region's development

At the next stage of works on RIS3 LV, visions of the development of the Lubelskie Voivodship were prepared in reference to the implementation of the innovation policy, assuming the “development of a selective model of development based on smart specialization and implementation of a creative innovation model as a way of transformation of endogenous development potentials of the Lublin Region”.³³ Then, the principal and five specific objectives of RIS3 LV was specified (tab. 1). The priorities were determined based on analyses (including SWOT) and problems and expectations emphasized during discussions and panels. Three development priorities were identified. Selected directions of activities were ascribed to them (tab. 2).

3.2.3 Implementation of RIS3

The implementation of RIS3 LV covers the institutional system as well as financing sources and the strategy implementation plan in the period 2014–2020. Implementation takes the form of a process where the most important elements are: planning, organization, motivation, and control (monitoring and evaluation) ascribed to particular units in the RIS3 LV decision-making structures. The basis for the institutional system of implementation of RIS3 LV is provided by: the Board of the Region, the Council for Innovation, and the RIS3 LV Managing Authority which is LCIR operating in the structures of the Department of Economy and Foreign Cooperation of the Marshall's Office of the Lubelskie Voivodship. The functioning of the system of implementation of RIS3 LV is based on the rules of good co-governance, including the principles of openness and transparency, partnership, effectiveness and efficiency, and coherence.

31. See: RIS3 LV, page 19, figure 4.

32. See: RIS3 LV, page 6.

33. See: RIS3 LV, page 41.

Tab. 1. Principal and specific objectives defined in RIS3 LV

Principal objective
Initiate technological and non-technological transformation of endogenous development potentials of the region through selective, smart specialization-based development model and implementation of creative innovation.
Specific objectives
<ol style="list-style-type: none"> 1. Developing territorial capital, particularly in the areas of smart specialization 2. Strengthening the regional research and innovation system to be based on the quadruple helix connecting all stakeholders interested in cooperation 3. Incorporating the region into the national and international chain of innovation and cooperation network 4. Developing effective instruments to support innovation and competitiveness of the voivodship's economy 5. Stimulating dynamic advantages of the location, particularly in the form of: <ol style="list-style-type: none"> (1) strengthening the institutions supporting business (2) developing market services for business (3) developing financial markets important for the growth of demand for innovation from all companies

Source: Own study based on RIS3 LV, pages 34–35

Tab. 2. Priorities and directions of activities in the scope of implementation of the goals of RIS3 LV

Priority	Direction of activities
1. Enhancing the ability of business entities to create and absorb knowledge and implement innovations, particularly in areas of regional smart specialization	<ol style="list-style-type: none"> (1) stimulating the development of entrepreneurship, particularly technological entrepreneurship (2) increasing the level of innovation of already operating companies (3) improving the knowledge and competences of human resources for the industry (employees and managers) (4) stimulating and developing network cooperation between business entities (5) developing the financial engineering instruments for innovation, adjusting, to a greater extent than so far, the type of financial support to the nature of innovation
2. Increase the ability of entities operating in the science and research sector to create and commercialize knowledge in areas of regional smart specialization	<ol style="list-style-type: none"> (1) increasing R&D personnel for creating and transfer knowledge for the development of smart specializations of the region (2) increasing the efficiency of use of the R&D infrastructure for conducting and commercialization of research in the areas related to smart specialization of the region (3) contributing to growing importance of the Lublin science in the areas of smart specialization at the national and international level
3. Strengthening the institutions supporting business and public administration bodies open to innovation	<ol style="list-style-type: none"> (1) transforming the institutions supporting business into regional growth centers (2) developing efficient and open to innovation public administration bodies (3) promoting entrepreneurship and innovation

Source: Own study based on RIS3 LV, pages 40–48

The implementation of RIS3 LV also involves the implementation of 6 pilot programmes. Based on good practices (among others Pro Inno Europe platform and experience in the implementation of regional projects—e.g., Inno-broker), they aim at testing new instruments, evaluation of their effectiveness, and preparation of procedure of popularization of the most efficient solutions to changing needs and challenges related to the development of the areas of regional smart specialization. The first pilot programmes cover six areas:³⁴

34. See: RIS3 LV, page 49.

- (1) regional research programmes in the areas of smart specialization
- (2) technological entrepreneurship
- (3) partnership, networks, and clusters
- (4) regional growth centers
- (5) financial engineering for innovation
- (6) innovative public procurement

Pilot programme “Regional Programme of Research in the Areas of Smart Specialisation” deserves particular attention. Its implementation will continue the entrepreneurial discovery process in the scope of RIS3 LV.³⁵

The monitoring system of RIS3 LV is based on indicators described in terms of base (available in 2014) and target values (2020/2030).³⁶ Because RIS3 LV assumes the promotion of the Lubelskie Voivodship in the Regional Innovation Ranking, benchmarking indicators included in the Innovation index were also adopted.³⁷ The evaluation process will involve each kind of research: ex-ante in 2013, on-going in the annual cycle, mid-term in 2018 (it covers among others the evaluation of the degree of reaching milestones, effects of strategy implementation, and possible intervention adjustments), and ex-post in 2022 which will concern the evaluation of particular interventions on the level of innovation and competitiveness of the Lubelskie Voivodship. They will provide the basis for the determination of the direction of support of smart specialization in the next perspective.

3.2.4 Financing—theory and practice

The strategy on its own will not bring about change if it is not translated into delivery instruments considered in the Operational Programmes of Cohesion Policy. The implementation system, including connection points with particular operational programmes 2014–2020 (i.e., regional—ROP LV, national—OP Eastern Poland, OP Smart Growth, OP Knowledge, Education, Development, OP Infrastructure and Environment, OP Digital Poland, OP Fishery and Sea, Rural Development Programme) and funds (ESF, ERDF, EARFD, CLLD). The system will include other available funding sources—i.e., EU programmes, including Horizon 2020, COSME, INTERREG, ENI CBC Programmes, Erasmus, and Creative Europe. Pursuant to the strategy, the main source of financing of RIS3 LV will be ROP LV, aimed at an increase in the competitiveness of the region based on endogenous potentials, favoring an increase in social and territorial cohesion. The objective is implemented by 13 priority axes. Financing stipulated in RIS3 LV and that resulting from the provisions of ROP LV is shown in table 3.

RIS3 LV in the scope of ROP LV stipulates financing at a level of EUR 788,8 million (35,2% of all public resources for the implementation of RIS3 LV). In practice, EUR 2230,96 million has been allocated from the EU resources for the implementation of the entire ROP LV. Combined with the national contribution, it amounts to EUR 2 624,66 million, whereas for financing of undertakings and investments corresponding with the implementation of RIS3 LV, EUR 482,5 million is stipulated (18,7%). The strategy assumes that RIS3 LV will be supported in the scope of 9 out of 13 priority axes. In practice, intervention is only stipulated in the scope of 4 priority axes, that is:

35. The programme aims at: (1) developing an integrated regional research agenda for the development of smart specialisation, and (2) designing and testing a regional technological observatory combining monitoring of new and emerging technologies with methods of identification of their applications, estimation of the market potential, and defining the basic support instruments determining and/or accelerating the commercialisation of new solutions (RIS3 LV, pages 49–50).

36. The most important indices of monitoring of RIS3 LV include: (1) GDP per capita; (2) labour market indicators; (3) gross value added per 1 person employed in agriculture in comparison to the national average; (4) the share of graduates in mathematics, natural sciences, technical, and medical sciences per the total number of graduates; (5) the share of persons aged 25–64 learning and continuing learning in the total number of population at that age cohort (ongoing education of adults); (6) the share of expenditures for R&D activity in the GDP of the region; (7) the percentage of patents granted in the region in the total number of patents granted in Poland; (8) number of SMEs per 10 thousand residents (RIS3 LV, pages 66–67).

37. The adopted stimulators included: Human resources, Open, excellent, and attractive research systems, and Financing and support; in area Actions taken by companies: Company investments, Links and entrepreneurship; Intellectual assets; and in area Results: Innovators and Economic impacts.

Tab. 3. Financing from public resources of the implementation of RIS3 LV in the period 2014–2020—assumptions and implementation (in EUR million)

Priority axes of RPO	Financing stipulated in	
	RIS3 LV	ROP LV
1. Research and innovation	45,5	27,0
2. Digital Lubelskie Voivodship.	72,3	—
3. Competitiveness of enterprises	285,6	343,1
4. Environmentally-friendly energy	79,4	—
5. Energy efficiency and low-carbon emission economy	37,8	—
9. Labor market	80,8	—
10. Adaptability of enterprises and employees to the changing conditions	49,7	24,6
12. Education, skills, and competences	107,4	87,8
13. Social infrastructure	30,3	—
Total	788,8	482,5

Source: Own study based on RIS3LV (page 63) and Detailed Description of Priority Axes of ROP LV, Marshall Office of the Lubelskie Voivodship, Lublin, 15 April 2017

- PA1—in the scope of measures 1.1, 1.4, 1.5 aimed at activating the innovative activity of enterprises through investments in infrastructure necessary for conducting R&D works and implementation of instruments encouraging the cooperation of enterprises and R&D entities;
- PA3—in the scope of all stipulated measures the implementation of which aims at supporting enterprises, particularly from the SME sector, creating new products and services (including those based on ICT), expanding their activity beyond the local market and initiating cooperation (also in the scope of clusters) for the purpose of improvement of their competitive position; intervention will also be aimed at the provision of favorable conditions for the development of business activity, including: creation of investment areas, increase in access to professional services and knowledge, and economic promotion on national and international markets;
- PA10—in the scope of measure 10.1 aimed at financial support of development services (analysis of needs, training, consultancy) that will help companies from the SME sector and their employees adjust to changes related to global trends (e.g., popularization of high-tech technologies, ageing of society, etc.); and
- PA12—in the scope of measure 12.4 aimed at initiating and support of cooperation of schools and educational facilities providing vocational education with their socio-economic environment for the purpose of increasing their chances for employment of students of vocational schools adequate to the requirements of the regional labor market.

It should be emphasized that ROP LV assumes that in the scope of the above PA and measures, support combined with the areas of regional smart specialization specified in RIS3 LV will be treated as a priority. SMEs and their employees have the greatest chance for obtaining the financial resources. The highest amount of resources in the scope of ROP LV—EUR 343,1 million—is allocated to financing pro-innovation measures in the scope of PA3 aimed at support of the competitiveness of SMEs—RIS3 LV stipulated financing at a level of EUR 285,6 million. Except for this case, when estimates resulting from the strategy proved to be reduced in comparison to the actual level of intervention, in the scope of the remaining priority axes, financing of measures related to the implementation of RIS3 LV decreased. In the case of PA1 this results from the change of the demarcation line between regional and national programmes the result of which was transferring a part of resources to support of R&D&I from the regional to the national level. Notice that intervention in the scope of ROP LV for the implementation of the provisions of RIS3 LV, although lower than assumed, has a chance to effectively support measures of the implementation of which in the future can to a great degree translate into the strengthening of endogenous potentials of the Lubelskie Voivodship, transformations of the economy towards sectors based on knowledge and innovation, and favor the strengthening of competitiveness of pro-innovative companies on the national and international scale (Kociuba 2016).

Summary

Changes in the EU and national policy in reference to regional development, among others the inclusion of the place-based and territorial approach, provided for the possibility of better and more efficient use of endogenous development potentials of particular regions through the identification and then support of regional smart specializations. It should be emphasized that the implementation of smart specialization, a concept developed by a group of innovation scholars, on the one hand constitutes one of few examples of when academic thought was transferred to development policy, and on the other hand is an important element supporting the concentration of intervention on a limited number of key priorities in selected knowledge-intensive sectors, the most valuable for the provision of competitive advantages, and in the case of many countries and regions, also a decrease in development delays. Therefore, smart specialization constitutes a perfect tool for reforming the Cohesion Policy, according to McCann and Ortega-Argilés (2015) aiming “to promote the development of many of Europe’s weaker regions.”

The difficulty in the implementation of the concept, signaled by its “father” Foray (2015) is the fact that smart specialization “imposes” innovativeness on countries and regions as a measure for stimulating their competitiveness. In the case of weakly developed and peripheral regions, this can be difficult due to the fact that they have other, more important and urgent needs. In such a situation, the coordination of the way and scope of financing of innovation can present a difficult choice for the authorities and potential beneficiaries: between the necessity of expenditures – in the case of authorities — and not always justified use — in the case of companies — of EU resources, and the actual creation of added value and increasing competitiveness in the national and international markets. Therefore, in the case of many regions that in previous perspectives were “loaded” with vast amounts of resources with no considerable effects in terms of an increase in their innovative potential, among others the Lubelskie Voivodship, the implementation of provisions of regional innovation strategies and reaching objectives adopted in them can prove to be very difficult and bring various consequences, from positive, resulting from the motivation of the regional decision-making authorities to involve all stakeholders in the process of not only the preparation but also implementation of RIS3 provisions, to negative in the form of an approach to the regional smart specialization as another opportunity to obtain EU resources.

The future of the implementation of RIS3 in regions will show whether and in what way the new tool of Cohesion Policy is dependent on power and politics, or influence of entrepreneurs, and how much it is supported by regional R&D potential. It will also permit answering the question of whether RIS3 is only a reflection of the compromise between requirements towards the regional authorities and demands of business, whether the provisions of the strategy reflect the actual needs and potentials, and whether their implementation will strengthen the competitive position of regions in areas diagnosed as smart specialization. In the case of the Lubelskie Voivodship, certain symptoms of success are observed, manifested in high involvement of all groups of stakeholders in the preparation of RIS3, as reflected in the composition of bodies coordinating the process of preparation, implementation, and adapting of RIS3 LV, exchange of information and experience in the scope of the implemented national and foreign projects, as well as a broad spectrum of competences through LCIR — the institution supervising and coordinating works on the implementation of RIS3 LV on behalf of the Marshall’s Office. The role of regional administration seems to be of key importance not only in the process of implementation of RIS3, but also encouragement of potential beneficiaries, particularly those from the dominant sector of small and medium-sized enterprises, to consciously build the position of their companies based on the regional R&D potential, and with the support of their pro-innovation activities and investments in the scope of intervention under ROP LV. Such implementation of regional smart specialization has a great chance for strengthening the competitiveness of the Lubelskie Voivodship in the knowledge-based economy in the future.

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