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Regional Smart Specializations and Sustainability: The Challenges of the European Green Deal

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Abstract

The announcement of the European Green Deal in 2019 was an important milestone in the European Union in terms of implementing the basic principles of sustainable development. Since then, most strategic documents in the community, but also in countries and regions, have referred to the concept. An important development from the previous Europe 2020 strategy, announced in 2010, was the reliance on place-based policy, which was reflected in the establishment of smart specializations at national and regional levels. Although the previous strategy had also referred to sustainable development, the specializations did not explicitly address this concept. The purpose of the article is to review the Regional Smart Specializations (RS3) in the Polish regions in the context of the concept of sustainable development and recommendations for modifying these specializations to bring them in line with the basic areas indicated in the European Green Deal. The article uses an analysis of relevant data, provides a review of the literature on the subject, and refers to key strategic documents of the European Union.

Keywords: sustainable development, sustainability, circular economy, European Union, smart specialization, region, European Green Deal, strategy

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Introduction

The announcement of the European Green Deal in December 2019 can be seen as the opening of a new phase in the development of the European Union (EU). The EU's long-standing strategy has a strong focus on emission reduction targets and climate protection.[1] This was confirmed by the European Parliament through the European Climate Law on June 24, 2021, which indicated a 55% emissions reduction target by 2030 and a climate neutrality target by 2050.[2] The European Green Deal is intended not only to pave the way to climate neutrality but also to contribute to sustainable development. In the previous Strategy for Smart, Sustainable and Inclusive Growth — Europe 2020, one of the three priorities was sustainable growth (i.e., the transformation to a competitive, low-carbon, resource-efficient economy). These goals are still in effect. As part of Europe 2020, announced in 2010, each of the community's regions and member states developed smart specialization strategies. This concept was intended, on the one hand, to direct the interest of stakeholders (including businesses, research units, and business environment institutions) to strategic areas that represent the most pressing challenges in the European Union, and, on the other hand, to take advantage of the potential of the regions and countries of the community by identifying areas in which to

1. See: "The European Green Deal. Striving to be the first climate-neutral continent." https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en (accessed 2023-09-20).

2. See: Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'). PE/27/2021/REV/1. OJ L 243, 9.7.2021, p. 1–17.

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invest resources.[3] After 2010, EU member states and regions prepared regional and national smart specializations, which were modified. In Poland, specializations were developed in all the 16 voivodships, matching them to regional resources and potential. Regional authorities involved experts, representatives of the academic community, entrepreneurs, and business environment institutions in the entrepreneurial discovery process to develop specializations. The authorities had some latitude in this process, although each region referred to pro-environmental concepts and those tied to the circular economy or sustainable development. Although it is a decade since the development of the specializations, in most provinces, the state of affairs still has not changed. Meanwhile new challenges have emerged, which are included in the European Green Deal (EGD). After reviewing the Regional Smart Specialization (RIS3) in the context of sustainable development (SD) it was found that these perspectives are framed in a very different way.

1 Circular economy and sustainable development in EU policy

The CE concept has been gaining in popularity for more than three decades, not only among researchers but also those responsible for the policies of many countries. The CE concept itself is defined in various ways. After analyzing more than 100 definitions of CE, researchers at Utrecht University concluded that what they have in common is the issue of decoupling the extraction and use of natural resources from economic performance, with the main outcome being increased resource efficiency (Kirchherr, Reike, and Hekkert 2017). It is in this direction that current research is being carried out, similarly to the legislation of many countries (Mavropoulos and Nilsen 2020). More and more countries around the world, as well as international organizations (including the EU), are implementing CE demands on the assumption that increased resource efficiency through closed material loops will reduce material extraction and waste disposal, in this way relieving the pressure on the environment (Ghisellini, Cialani, and Ulgiati 2016). It should be noted that in the case of research on CE, one of the main problems, besides the definition itself, is the identification of the area of analysis. As CE is treated as a political concept in the discussion of decoupling resource extraction and use, it is worth bearing in mind the complexity of the issue, including the differing interests of policymakers, producers and consumers (Korhonen et al. 2018). An important caveat is also the fact that, since it is not possible to completely decouple resources from production, CE is not only a certain recommendation but also a challenge.

A universal view of CE has been put forward by the Ellen MacArthur Foundation, according to which it is the consideration of repair and remanufacturing in design and maintaining the highest utility and value of products, components and materials at all times, separating technical and biological cycles.[4] The term circular economy has become increasingly important in recent years as it relates to trends in the global economy related to concerns about conserving the planet's natural resources. The term encompasses most other related concepts associated with environmental protection.

As for the concept of sustainable development, although it is similar to CE, there are some differences. Some researchers equate CE with the concept of sustainable development, while others make a distinction between them (Pieroni, McAloone, and Pigosso 2019; Sauvé, Bernard, and Sloan 2016). It can be said that CE focuses mainly on economic issues, while sustainability also includes social and environmental aspects. Thus, SD can be described as a broader concept that includes CE. According to some researchers of the issue, establishing clear criteria for how the two concepts differ is very important in order to avoid the risk of scientific simplification and misunderstanding (Geissdoerfer et al. 2017). The EU example shows that these distinctions are blurred, which can create some confusion. The difficulty in defining the area is also related to the concept

3. See: Communication from the Commission. EUROPE 2020. A strategy for smart, sustainable and inclusive growth, Brussels, 3.3.2010, COM/2010/2020 final.

4. See: "Towards a Circular Economy: Business Rationale for an Accelerated Transition." Ellen MacArthur Foundation, November 2015, available at https://www.ellenmacarthurfoundation.org/towards-a-circular-economy-business-rationale-for-an-accelerated-transition.

of sustainability, which is sometimes interpreted very broadly, including the context of political discourse (Kambites 2014).

In EU policy, interest in the areas we define today as CE and SD emerged in the 1980s. Already in the Single European Act of 1986,[5] there were references to areas that had not hitherto been the domain of common policy. These include social policy and environmental protection (Swann 1992). Interest in these spheres was part of a worldwide trend. In 1987, the World Commission on Environment and Development published a document entitled "Our Common Future," which defined sustainable development (SD) as "development that meets present needs without compromising the ability of future generations to meet their needs." SD aims to ensure economic development while protecting social and environmental sustainability. The document is known as the "Brundtland Report."[6] Since then, successive key EU documents and treaties have referred to SD and thus also to CE. Of particular importance was the Lisbon Treaty.[7] This document also recognized sustainable development as one of the fundamental goals of the community. This was confirmed in the Europe 2020 Strategy. The culmination of this trend was the announcement of the European Green Deal. This is not just a package of energy and climate measures but a comprehensive strategy setting the course for the transformation of EU policy. Although the EGD is very much present in the public discourse and its general assumptions are widely known, this strategy raises a few doubts. According to the EGD, Europe is to become climate-neutral and based on CE and "clean" energy sources in order to protect the health of the citizens as well as the diversity of the environment. This strategy is based on so-called "green growth," which, unlike brown growth (based on fossil fuels), aims to promote business and industrial practices with limited environmental impact along with the development and implementation of environmental policies and technological innovations that would reduce greenhouse gas emissions, all without slowing GDP growth (Ossewaarde and Ossewaarde-Lowtoo 2020). The European Commission has based its communication strategy on these pillars, embedding its narrative in the paradigm of sustainable development. At the same time, there are voices among researchers that signal some contradictions related to the implementation of EU climate policy. According to EU documents, simultaneous economic growth and environmental protection are possible. At the same time, the documents lack references to the contradictions between an economic model supporting unlimited growth rates and environmental and human resources, which, by definition, are limited (Mathers 2007). According to critics of the EU's climate policy, the community's authorities confuse sustainable development with ecological modernization (Braun 2014). Be that as it may, the concept of SD itself, according to some researchers, should be rethought, as it currently focuses more on policies, strategies, and definitions than on action itself (Ramos et al. 2020). While the issues related to the concept of SD itself are quite well described, the practices that could guarantee the transition from unsustainable to sustainable development have not been developed. Finally, the key question remains: what does sustainable development mean? Most of the publications on the subject state that there is no clear definition (although there are generally many). Ramos and his research team emphasize that the concept of SD is still controversial, open and challenging (Ramos et al. 2020, 2). At the same time, it is a very capacious concept that can hold a great number of meanings, from scientific to lifestyle contexts (Starke, Assadourian, and Prugh 2013). Meanwhile, the more specific the practices described as sustainable are, the greater positive effect they produce (Castro-Lopez, Iglesias, and Santos-Vijande 2023). EU practice has been present in the policy and academic space for at least a dozen years. The announcement of a new EU policy paradigm in 2019 further contributed to the discussion of this practice. The Lisbon Treaty, in addition to emphasizing the importance of sustainable development, brought another important change that materialized in the form of smart specializations. With the new setting of EU priorities expressed in the EGD, the issue of smart specializations should be reconsidered.

5. See: Single European Act. Official Journal of the European Communities No L 169, 29.6.87.

6. See: "Report of the World Commission on Environment and Development: Our Common Future." https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf.

7. See: Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007. OJ C 306, 17.12.2007, p. 1–271.

2 Smart specializations – idea and limitations

The idea of smart specializations is part of the EU's philosophy of place-based innovation policy (i.e., territorially focused policy). One inspiration for incorporating this concept into EU policy was the work carried out in the first decade of the 21st century under the direction of Dominique Foray.[8] The approach expressed in this publication, among others, is to use regional potential in innovation-based economic development. The application of the concept also involves reducing resources and budgets to make the most of available development factors. The concept takes into account sector specifics, linkages between the sectors, and innovation infrastructure (Grillitsch and Asheim 2018). The idea quickly found its way into the Europe 2020 strategy in the following concepts: smart growth (i.e., growth based on knowledge and innovation), sustainable growth (i.e., transformation towards a competitive, low-carbon, resource-efficient economy, inclusive growth (i.e., fostering the economy with a high level of employment and ensuring economic, social and territorial cohesion.[9] As conceived by the European Commission, a smart specialization strategy is the setting of such R&D, technology and innovation priorities for a region that capitalize on the strengths, competitive advantages and potential for excellence of the region/country, have emerged with the full involvement of a wide range of stakeholders while encouraging innovation and experimentation, and are subject to policy support and investment (primarily in the private sector) to ensure knowledge-based development.[10]

In EU countries, lists of National Smart Specializations (NSS) and, in each province, Regional Smart Specializations (RS3) were established.[11] The identification of the specializations took place in the process of entrepreneurial discovery — a process that occurs with the participation of key partners of the national innovation system and later leads to the targeting of public support towards areas established as smart specializations of the country and its regions.[12]

In Poland, in the case of NSS, the process of establishing the specializations proceeded in a systematic way and was preceded by a study which diagnosed the state of Polish industry and identified key technologies until 2030, including technologies in which Poland could be commercially successful in the global market.[13] On the basis of 10 key technologies, the NSS was selected, which is still being updated, as it is a so-called open document. Working groups and focus groups, the so-called smart labs, are working on modifying and updating the NSS. The meetings of the latter are attended by entrepreneurs identified as leaders in particular areas. The method of identifying and analyzing areas within the groups is very careful and refined. There are currently 13 NSS formulated, worded as follows: 1. Healthy Society, 2. Modern Agriculture, Forestry & Food, 3. Sustainable (Bio)Products, (Bio)Processes and Environment, 4. Sustainable Energy, 5. Smart Zero-Carbon Buildings, 6. Environmentally Friendly Transportation, 7. Circular Economy, 8. Advanced Materials and Nanotechnology, 9. Electronics and Photonics, 10. Information, Communication and

8. See: "Smart Specialisation — the Concept." Knowledge Economists Policy Brief no 9 by Dominique Foray, Paul A. David, and Bronwyn Hall, June 2009, available at https://ec.europa.eu/invest-in-research/pdf/download_en/kfg_policy_brief_no9.pdf.

9. See: Communication from the Commission. EUROPE 2020. A strategy for smart..., op. cit.

10. See: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Regional Policy contributing to smart growth in Europe 2020, COM/2010/0553 final.

11. See: "The Green Deal and Smart Specialisation." Final draft by Jan Larosse, Dimitri Corpakis, and Richard Tuffs, Version 3 final, Friends of Smart Specialisation, 18 February 2020, available at https://friendsofsmartspecialisation.eu/system/files?file=2021-01/The%20Green%20Deal%20and%20Smart%20Specialisation%20draft%202%20v3%20final.pdf.

12. See: "Promoting innovation in transition countries. A trajectory for smart specialization." JRC Science for Policy Report by Alexander Kleibrink, Philippe Larédo, and Stefan Philipp, Joint Research Centre, 2017, available at https://wbc-rti.info/object/document/16390/attach/jrc106260_jrc_science4policy_s3-trajectory_transition-countries_2017_final_proof-read_online.pdf.

13. See: "Foresight technologiczny przemysłu — InSight2030: aktualizacja wyników oraz krajowa strategia inteligentnej specjalizacji (smart specialization)" [Industry technological foresight — InSight2030: update of results and national smart specialization strategy]. Justyna Gorzoch (ed.), Ministerstwo Gospodarki, Warszawa, grudzień 2012 r., available at https://nanonet.pl/wp-content/uploads/2018/02/Foresight-technologiczny-przemysłu-–-InSight2030.pdf.

Geo-Information Technologies, 11. Automation and Robotics, 12. Creative Industries, 13. Marine Technologies.[14]

More complex was the process of the emergence of the specializations in the regions. In accordance with the rules of the European Union, regions have a great deal of freedom in shaping the areas they intend to develop, which resulted in a different treatment of the challenges associated with each priority. In applying RS3, the pursuit of regional development was taken as a starting point, taking into account not only the advantages and strengths but also the constraints. RS3 were considered in the creation of Regional Operational Programs for individual provinces.

As already mentioned, specializations arise from the potential of the regions. The process of entrepreneurial discovery in each of the provinces was carried out in a different way. In practice, the methods of carrying out entrepreneurial discovery processes determined the shape and scope of smart specializations in the regions. Most often, the process was based on cooperation and consultation with stakeholders, who primarily included entrepreneurs, employees of the scientific sector and experts in specific fields. However, the framework of the process was determined by representatives of the voivodships (i.e., employees of the Marshal Offices). On the one hand, such a method seems optimal in terms of working out areas of high potential; on the other hand, it entails a risk that different regions are guided by different considerations, making it difficult to compare them with each other. In a report prepared by the Polish Agency for Enterprise Development on the entrepreneurial discovery process, it was clearly indicated that the specializations caused the most difficulties for the regions.[15]

The result was a significant variation in how the specializations were detailed, with some provinces formulating them very precisely and others only generally. Another problem was how the selection was made. In many voivodships, areas with low productivity, i.e. little potential, were indicated in terms of regional development (Ejdys 2013). The process of establishing a specialization itself did not always have a substantive basis, as sometimes it was hard to consider a particular field as a strength of the region.[16] Another problem is the correspondence of the specializations in the regions with the NSS. It is worth noting that RS3 were linked to the EU's funding of the indicated initiatives in the regions. This contributed not only to their formulation in a very broad way but also to insufficient consideration of local and regional specifics. Some of the formulations are very vague (high quality of life, green economy, industry 4.0). Regional specificity is emphasized only in some cases, as exemplified by the Lódzkie Voivodship (modern textile and fashion industry), the Podkarpackie Voivodship (aviation and aerospace), or the Pomorskie Voivodship (offshore and port and logistics technologies). The proposed concept of including EGD areas in the newly formulated RS3 should also reflect regional and local specificities to a greater extent.

Regardless of the assessments of the process of establishing smart specializations, the entrepreneurial discovery process itself has been an important stage in the design of economic and social policies in the regions. The provincial authorities, together with important stakeholders, established priorities for specific technologies and areas of the economy to support the development of the regions. Given that the strategy of smart specialization in dynamic terms implies a constant search for new opportunities in the region, change and constant updating are an immanent part of the implementation of this concept.[17] This strategy is a difficult process, as evidenced by the

14. See: kis (krajowa inteligentna specjalizacja) [national smart specialization] website. https://smart.gov.pl/en/ (accessed 2023-09-20).

15. See: "Benchmarking systemów monitoringu inteligentnych specjalizacji oraz Procesu Przedsiębiorczego Odkrywania. Benchmarking na poziomie regionalnym. Raport końcowy" [Benchmarking of monitoring systems for smart specializations and the Entrepreneurial Discovery Process. Benchmarking at the regional level. Final report]. Report by Marcin Pierzchała. Tomasz Geodecki, Wojciech Onyśków, Agnieszka Otręba-Szklarczyk, Wacław Piekara, Karolina Rożniatowska, Marcin Rzepka, Magda Szczypka, Dariusz Szklarczyk, and Roksana Ulatowska, Fundacja Rozwoju Badań Społecznych, available at https://www.parp.gov.pl/storage/publications/pdf/Raport-kocowy---benchmarking-regionalny_210423.pdf.

16. See: "Review of National and Regional Research and Innovation Strategies for Smart Specialization (RIS3) in Poland" by Marcin Piatkowski, Tomasz Szuba, and Grzegorz Wolszczak, The World Bank, available at https://openknowledge.worldbank.org/server/api/core/bitstreams/261da1c2-1624-5738-9ae5-4160f68cd16f/content.

17. See: "Smart Specialisation, Seizing New Industrial Opportunities." Report by Antonio Vezzani, Marco Baccan, Alina Candu, Alessio Castelli, Mafini Dosso, and Petros Gkotsis, JRC Technical Reports, 2017, available at

fact that it was not only in Polish regions that establishing smart specializations was a problem. In most European regions, it was customary to limit potential by inappropriately establishing specializations and by prioritizing different combinations of non-specialized or unrelated sectors (Marrocu et al. 2023). As already mentioned, the development of RS3 was related to the implementation of the Europe 2020 strategy. Of great importance was also the fact that the areas included in the specializations largely determined the distribution of funds from the EU in the 2014–2020 perspective, primarily from the European Regional Development Fund. A significant part of these funds were distributed under the Regional Operational Programs. Therefore, it can be assumed that RS3 were deliberately developed in a broad way, so as to fit into the strategic framework of the European funds, and thus enable the largest possible group of recipients to benefit from these funds.[18] The current EU policy transformation is an opportunity for modification of specializations and new insights in the context of CE and SD.

3 Proposal to align RS3 with the European Green Deal

The European Green Deal, in legal terms, is a package of policy initiatives aimed at putting the EU on the road to environmental transformation, in this way achieving climate neutrality by 2050. It was formally announced as a Communication from the Commission to the European Parliament, the European Council, the Council, the Economic and Social Committee, and the Committee of the Regions. It is precisely its formal form that poses a problem in terms of managing the areas it addresses. The document does not contain an enumerative list of tasks to be implemented. Nonetheless, in addition to the rationale and ways to implement the main objectives, the communication presents its individual elements. The areas are listed below, with their abbreviated names given in parentheses and followed by sequential numbers needed in the process of making proposals for the unification of smart specializations:

- more ambitious EU climate targets for 2030 and 2050 (Climate 1)
- delivering clean, affordable and secure energy (Energy 2)
- mobilizing the industrial sector for a clean, closed-loop economy (Industry 3)
- building and renovating in ways that conserve energy and resources (Construction 4)
- accelerating the transition to sustainable and smart mobility (Mobility 5)
- from field to table: creating a fair, healthy and environmentally friendly food system (Food 6)
- protecting and restoring ecosystems and biodiversity (Biodiversity 7)
- zero emissions for a non-toxic environment (Emissions 8)

These areas are implemented through separate legislation, both at the EU level and in member states. However, these eight areas provide an important point of reference, and it is these elements that can form the basis for unifying and updating the Regional Smart Specializations. It should be remembered that the overriding idea behind the creation of RS3 was to highlight the diversity and uniqueness of European regions. However, this does not mean that it is not possible to find common areas, concerning the demands contained in the EGD as well as the key concept, which is sustainable development. Taking these assumptions into account, the figure shows RS3 by region. Based on the information contained in the regional innovation strategies, those specializations that are related to SD are indicated. In the last column, the EGD areas that relate directly to regional specializations are highlighted, which can provide a starting point for discussions on modifying RS3.

As the table shows, each of the 8 EGD areas could be reflected among the RS3s identified for Polish regions. Such an approach would require several modifications:

- The current wording of many of the RS3s is ambiguous, often covering a very broad spectrum. Greater precision of the RS3s is recommended.
- Currently, only some of the RS3s apply to SD. Given that the overarching concept embodied in the EGD is SD, there is a need to include elements of sustainability in all the RS3s.

https://s3platform.jrc.ec.europa.eu/documents/20125/247753/Smart+specialisation%2C+seizing+industrial+opportunities.pdf/21423d9c-e7ae-59dc-fa3b-2a0075c10501?t=1621268542865.

18. See: "Review of National and Regional Research and Innovation Strategies…," op. cit.

Table 1. Proposal to link RS3 with EGD areas

Voivodship	RS3	RS3 linked to SD	EGD areas
Dolnośląskie	1. Chemistry and medicine 2. Auto-Moto-Aero-Space 3. Natural and secondary raw materials 4. Machinery and equipment 5. Green deal 6. Industry 4.0 7. Technology-assisted living	3. Natural and secondary raw materials 5. Green Deal 6. Industry 4.0	**Climate** 1 Energy 2 **Industry** 3 Construction 4 **Mobility** 5 Food 6 Biodiversity 7 Emissions 8
Kujawsko-pomorskie	1. Safe food — agriculture processing, fertilizers and packaging 2. Medicine, medical services and health tourism 3. Automotive transportation equipment and industrial automation 4. Tools, injection molds and plastic products 5. Information processing multimedia, programming and ITC (information and communications technology) services 6. Biointelligent specialization — natural potential of the environment 7. Transportation, logistics and trade — water and land routes 8. Cultural heritage, arts and creative industries	1. Safe food — agriculture processing, fertilizers and packaging 6. Biointelligent specialization — natural potential of the environment	Climate 1 Energy 2 **Industry** 3 Construction 4 **Mobility** 5 **Food** 6 **Biodiversity** 7 Emissions 8
Lubelskie	1. High-quality food 2. Green economy 3. Healthy Society 4. Digital Society 5. Materials technology, production and logistics processes	1. High-quality food 2. Green economy	Climate 1 Energy 2 **Industry** 3 Construction 4 Mobility 5 **Food** 6 Biodiversity 7 **Emissions** 8
Lubuskie	1. Green economy 2. Health and quality of life 3. Sustainable industry	1. Green economy 2. Health and quality of life 3. Sustainable industry	**Climate** 1 Energy 2 **Industry** 3 Construction 4 Mobility 5 Food 6 Biodiversity 7 Emissions 8

Continues on next page

Table 1. Continued

Voivodship	RS3	RS3 linked to SD	EGD areas
Łódzkie	1. Modern textile and fashion industry (including design) 2. Advanced building materials 3. Medicine, pharmaceuticals and cosmetics 4. Energy, including renewable energy sources 5. Innovative agriculture and agri-food processing 6. Information technology and telecommunications	4. Energy, including renewable energy sources 5. Innovative agriculture and agri-food processing	**Climate** 1 **Energy** 2 **Industry** 3 **Construction** 4 Mobility 5 **Food** 6 Biodiversity 7 Emissions 8
Małopolskie	1. Life sciences 2. Sustainable energy 3. Information and communication technologies 4. Chemistry 5. Metal production 6. Electrical engineering and engineering industry 7. Creative and leisure industries	2. Sustainable energy	**Climate** 1 **Energy** 2 **Industry** 3 Construction 4 Mobility 5 Food 6 **Biodiversity** 7 **Emissions** 8
Mazowieckie	1. Safe food 2. Intelligent systems in industry and infrastructure 3. Modern business ecosystems 4. High quality of life	1. Safe food 4. High quality of life	**Climate** 1 Energy 2 **Industry** 3 Construction 4 Mobility 5 **Food** 6 **Biodiversity** 7 Emissions 8
Opolskie	1. Chemical technologies (sustainable) 2. Sustainable construction and wood technologies 3. Engineering and metal industry technologies 4. Agri-food technologies 5. Health care processes, products and services, and quality of life	1. Chemical technologies (sustainable) 2. Sustainable construction and wood technologies 4. Agri-food technologies 5. Health care processes, products and services, and quality of life	**Climate** 1 Energy 2 **Industry** 3 Construction 4 Mobility 5 **Food** 6 Biodiversity 7 Emissions 8

Continues on next page

Table 1. Continued

Voivodship	RS3	RS3 linked to SD	EGD areas
Podlaskie	1. Agro-food industry and related sectors 2. Metal and machinery, boatbuilding and related sectors 3. Medical and life sciences and related sectors 4. Eco-innovation, environmental sciences and related sectors	4. Eco-innovation, environmental sciences and related sectors	**Climate** 1 Energy 2 **Industry** 3 Construction 4 **Mobility** 5 **Food** 6 **Biodiversity** 7 Emissions 8
Podkarpackie	1. Aviation and aerospace 2. Quality of life 3. Automotive 4. Information technology and telecommunications	2. Quality of life	**Climate** 1 Energy 2 **Industry** 3 Construction 4 **Mobility** 5 Food 6 Biodiversity 7 Emissions 8
Pomorskie	1. Offshore and port and logistics technologies; 2. Interactive technologies in an information-saturated environment; 3. Eco-efficient technologies in the production, transmission, distribution and consumption of energy and fuels, and in construction; 4. Medical technologies for diseases of civilization and aging.	3. Eco-efficient technologies in the production, transmission, distribution and consumption of energy and fuels, and in construction	**Climate** 1 **Energy** 2 **Industry** 3 Construction 4 Mobility 5 Food 6 Biodiversity 7 Emissions 8
Śląskie	1. Medicine 2. Information technology 3. Energy 4. Green economy 5. Emerging industries	3. Energy 4. Green economy	**Climate** 1 **Energy** 2 **Industry** 3 Construction 4 Mobility 5 Food 6 Biodiversity 7 **Emissions** 8

Continues on next page

Table 1. Continued

Voivodship	RS3	RS3 linked to SD	EGD areas
Świętokrzyskie	1. Metal and foundry industry 2. Modern agriculture and food processing 3. Resource-efficient construction 4. Health tourism 5. Information and communication technologies 6. Trade fair and convention industry 7. Sustainable energy development	2. Modern agriculture and food processing 3. Resource-efficient construction 7. Sustainable energy development	**Climate** 1 **Energy** 2 **Industry** 3 Construction 4 Mobility 5 **Food** 6 Biodiversity 7 **Emissions** 8
Warmińsko-mazurskie	1. Water economy 2. Quality food 3. Wood and furniture	1. Water economy 2. Quality food	**Climate** 1 Energy 2 **Industry** 3 Construction 4 Mobility 5 Food 6 Biodiversity 7 **Emissions** 8
Wielkopolskie	1. Biosources and food for conscious consumers 2. Interiors of the future 3. Industry of tomorrow 4. Specialized logistics processes 5. ICT-based development 6. Modern medical technologies	1. Biosources and food for conscious consumers	**Climate** 1 Energy 2 **Industry** 3 Construction 4 **Mobility** 5 **Food** 6 Biodiversity 7 Emissions 8
Zachodniopomorskie	1. Chemical products for sustainable development 2. Intelligent manufacturing methods for products and machines 3. Next-generation natural processing 4. Blue economy and green transportation 5. Technologies and services of the future 6. Tourism and quality of life	1. Chemical products for sustainable development 3. Next-generation natural processing 4. Blue economy and green transportation 5. Technologies and services of the future 6. Tourism and quality of life	**Climate** 1 Energy 2 **Industry** 3 Construction 4 **Mobility** 5 Food 6 Biodiversity 7 **Emissions** 8

Source: kis (krajowa inteligentna specjalizacja) [national smart specialization] website, https://smart.gov.pl/en/.

- Unification of the RS3s at the Polish level is not recommended, since the main recommendation of place-based policy is diversity. It is therefore more important to align the RS3s with EGD areas but without unifying these areas.

The above proposal has a certain gap related to issues such as quality of life, medicine and IT. It is difficult to clearly assign these fields to the areas identified in the EGD. This gap is related to the issue of EGD-related phraseology promoted by the European Commission. As a linguistic analysis shows, EU policy documents, especially those related to the EGD, are often ambiguous and sometimes even difficult to understand (Eckert and Kovalevska 2021). Clarifying the meaning of both the areas indicated in the communication about the EGD and the SD promoted by the community bodies would be an important facilitation. Another solution could be the preparation of a document dedicated to linking the RS3s with the EU sustainable development policy. In the context of the implementation of the SD concept, the potential of the regions is not fully exploited (McCann and Ortega-Argiles 2016). The European Commission, in its communications on the EGD, wrote that the policy transformation would require a strong policy response at all levels and significant investment efforts.[19] Meanwhile, there is little discussion of how to implement this transformation at the regional level, nor does this discussion allude to the issue of smart specialization.

In EU policy, the role of the regions, which is very important, has been emphasized consistently for several decades, especially with reference to the need to establish regional operational programs with high budgets as well as the activities of the European Committee of the Regions. At the same time, there is a growing voice in the literature that regional development should be promoted not only through the use of endogenous potential but also the creation of stronger links between the overall EU policy and the policy of the regions (Asheim, Isaksen, and Trippl 2019). Place-based policy, by design, is tailored to develop existing strengths, specializations and opportunities and extend them into new development paths in the region. These, in turn, are rooted in location, history, culture and geography. The focus is on place—and on knowledge—rather than on sectors. Place-based policy is focused on leveraging local characteristics, complexity and interconnectedness to stimulate local and inclusive development. According to experts at Friends of Specialization, smart specializations were intended as a response to the limitations of the Lisbon Strategy in effect between 2000 and 2010, which ignored issues of common investment strategies for the knowledge economy. Linking the EGD's assumptions to RS3 is a condition for the strategy to take root in EU policy.

Conclusion

Linking RS3 to the main EGD areas could have some synergy benefits. While a certain lack of precision in these areas remains a problem, such a solution, despite its weaknesses, would steer specializations towards EU strategic priorities. The fall 2019 opinion of the Committee of the Regions, prepared by rapporteur Adam Struzik, Marshal of the Mazowieckie Voivodship, postulates that the UN Sustainable Development Goals could be helpful in developing regional development strategies. According to the rapporteur, a number of conditions would need to be met, including synergies between various sectoral tools and appropriate stakeholder involvement, to ensure a bottom-up and place-based approach to economic, social and territorial development.[20] It is worth noting that this opinion was formulated before the EGD was announced in December 2019. The EGD gave a new impetus to this discussion, but the direction proposed in the publication is in line with the trend presented, i.e. the structuring of RS3.

The recommended solution is to clarify the areas identified in the EGD as key ones and to provide guidelines for interpreting the concept of sustainable development. Clarification of RS3 issues

19. See: Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal, COM/2019/640 final.

20. See: "Opinion Factsheet. Recommendations for the successful design of regional development strategies beyond 2020." Opinion Number: CDR 644/2019, Date: 08/10/2019. https://cor.europa.eu/EN/our-work/Pages/OpinionTimeline.aspx?opId=CDR-644-2019.

in the context of the EGD is also important in the context of EU information policy related to the new understanding of economic development. Precision in this regard would make it possible to bring the SD concept closer to EU residents, as well as to demonstrate the benefits of the new community strategy (Siddi 2021).

An important argument for linking RS3 to the main areas of the EGD is the creation of regional strategies in member countries. Rooting specialization in the concept of sustainable development could be helpful for regional authorities not only in creating innovation strategies but also operational programs.

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