Smart specialization and sustainable regional growth

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Abstract. Recent transition to the sustainable economy distinguished by the specialization and digitalization market the pathways for the regional development. This process is considerably helped by the profound social and political transformative potential which is subjected to social innovations and smart potential. This paper shows how the social innovations and smart specialization might influence the sustainable growth of countries and regions with a special focus on building an efficient economic, social and institutional environment for the benefits of all agents on the market. In addition, it argues that smart specialization might also contribute to the competitiveness and well-balanced sustainable development of regions and territories.

1 Introduction

The specific characteristics of different geographical regions based on the routes followed for economic development constitute considerable prerequisites for the sustainable economic growth [1, 2]. This allows countries within a region or regions to focus independently on supporting specific types of investment that give their economies a competitive advantage. In implementing this approach, followed by close cooperation between countries and authorities, priority is given to the development of certain economic sectors such as agriculture, energy, transport, infrastructure, tourism, or agriculture [3, 4].

The intelligence (or "smartness") of the regions lies in using their regional strengths and capacities and to integrate different actors through innovation and practice. It aims to reorganise traditional sectors by shifting to value-added sectors such as energy, transport, infrastructure, tourism, agriculture and tourism. The use of the region's human, structural and relationship capital is crucial, and the intelligent specialisation of the regional economy as a whole contributes to this process [5, 6]

Attracted by European Union to more research and development, a more integrated regional innovation ecosystem is needed, with a focus on smart specialisation in the region. The European Commission's Smart Specialization Strategy for the European Union (ESM) envisages smart specialization as a key component of the European Union's transformation agenda. By creating regional values in a civil and economic context, universities and science and research centres can be a key component of innovation - a process driven by structural change in the EU that creates opportunities for innovation [7, 8].

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As a leader in research and innovation, the European Union should be recognised as a key player in the discovery and development of smart specialisations in regions and as an important contribution to the development of regional economies. To overcome a single approach, it needs a location-based approach: policies must be tailored to local contexts while recognizing that there are different paths for regional innovation and development [9-11]. It is now subject to proposed reforms of EU cohesion policy that support thematic concentration and strengthen strategic programming and performance orientation. A key aspect of smart specialisation is to favour technologies, fields, populations and businesses. This will provide a clearer communication of innovation policies that focus on the useful specialisations. To get a global perspective on smart specialization, one can access the EC Smart Specialization Platform: Innovation - Driven Growth in the European Union. To learn more about the role of Smart Specialization in Europe's economic development and growth, one can study the smart specialization of regions in the EU and its impact on global growth. For more information on EU research and development activities in this area, including the development of smart specialisations of regions and their impact on the future of Europe, the EU Smart Specialisations Platform might also provide some useful hints and valuable insights [12, 13].

Nevertheless, little is known about the practical impact of the implementation of the concept in policy and practice, and doubts have been raised about its effectiveness. Well-developed regions need to address these problems, however more research and development in this area and the ability to translate these concepts into policies and practices are needed. Based on empirical research covering regions divided into less developed, medium and advanced regions, one can study how European regions integrate into smart specialisation approaches and how the effectiveness of introducing smart specialisations differs in different geographical contexts.

2 Sustainable growth of the regional economy

Generally, the development of a strong regional economy and a sustainable growth model for the region can help the economy to make progress towards inclusion and move decisively towards sustainable development. Robust domestic demand and political support have led to the regions' developed economies growing at a steady pace [14, 15].

China and India, which lead the regions with high and steady economic growth, have been anchors of stability for the global economy in recent years, leading to an increase in economic activity in developing. The Chinese economy has maintained its rapid growth since China introduced reforms and a policy of opening up by 2010, becoming the world's second largest economy. In recent years, it has grown more slowly than the global average, owing to underlying domestic problems, such as a slowdown in the country's industrial sector and a decline in exports. China has relied on reform and innovation to sustain medium-high growth rates and accelerate economic change and appreciation. In the first half of this year, the growth rate was 6.7%, the fastest of all major economies. China's economy is not only the second-least developed in the world after the United States, growing at the unprecedented rate of 4.5% per year [16, 17].

In general terms, the link between economic and sustainable development can be seen in the following sections on the link between economic development and environmental sustainability. The final section sets out a set of principles for sustainable development, with sound economic principles as a guide for economic actors.

The essence of economics is to formulate the welfare - the welfare of people or citizens - by maximizing the social welfare function (SWF) as the maximized function of economic activity. In other words, the economic activity that generates jobs, incomes, earning power, and economic growth creates the opportunity to achieve the best outcome for the sovereign

wealth funds [18, 19]. There is no difference between an economic operator aiming to maximise profit and a social assistance agent. It is essential for governments to do the work necessary to provide basic services and coordinate the activities of economic actors in order to ensure that strategies for achieving sustainable development are coherent. Responsible governments will ensure that the economic activity of SWFs contributes to the development of sustainable growth and economic stability. One needs to stress the importance of promoting inclusiveness for sustainable development and stressed that progressive tax policies could effectively contribute to promoting a more balanced society and reducing extreme inequality. Since the economy is the source of human activity, effective governance is crucial for sustainable development. Better economic governance is a key part of efforts to implement progressive tax reforms, manage structural change and move towards sustainable development. The concept of the Blue Economy, initiated at the Rio de Janeiro Conference in 2012, was recently called for a state-set roadmap for the development of a "Blue Economy" in the region. Effective economic governance can make a major contribution to increasing investment, boosting productivity and accelerating the fight against poverty, "the report concluded. In the forthcoming Economic and Social Report, due to be published in April next year, we will examine the role of governance in improving development outcomes and the impact of economic and social governance on economic growth [20, 21].

On the one hand, such roadmaps and cooperation initiatives will encourage countries to increase trade and investment, particularly in the marine sector, and to contribute to food security and poverty reduction. For example, the Association of Southeast Asian Nations (ASEAN) can also play a major role in this by taking initiatives to fulfil its core functions of promoting cooperation and maintaining peace, stability and prosperity in the region. The environment for sustainable development is a source of optimism, but efforts are currently facing major challenges. Global economic recovery remains weak, economic globalization is facing strong headwinds, regional trouble spots are incessant, momentum toward sustainable development is weak, and economic growth is overtaking it. At present, the Blue Economy partnership with the sea is unlikely to work as well as it should if a number of problems at sea, such as climate change and environmental degradation, are not resolved. Sustainable development remains a difficult path, but there are signs of progress in linking sustainable development, economic growth and environmental sustainability in the region. Sustainable development initiatives, such as the Blue Economy Partnership with the Sea, are becoming increasingly important and intertwined.

3 Smart specialization strategy

A key aspect of smart specialisation, either on the regional or on the country level, is to promote technology, fields, population and businesses, and to create competitive advantages that would help these territories to foster their economic and social development using the principles of sustainable growth. A key element of the smart specialization strategy for the regional innovation and innovation development is the promotion of technologies in the field of business enterprises and economic and social institutions [22, 23]. The smart specialisation strategy for regional innovation and innovation development focuses on promoting technologies in the fields of technology, economy and the civil society. The Smart Specialisation Strategy (S3) is in fact a part of the European Commission's Smart Growth Strategy, which aims to lead Europe to smarter, more inclusive and more sustainable growth. In particular, the S3 is an economic development strategy that aims at research and innovation and involves a gradual approach based on the development of a common vision. This is an innovative approach that has recently been systematised in the literature as part of the European Commission's Smart Growth Strategy (S3). To provide a global perspective on smart specialisation, we are using the EU's Smart Specialisation Platform and the EU's Smart

Growth - driven innovation strategy. This will make it clearer how important it is to focus innovation policy on useful specialisations (i.e. "specialisations"). For more information, we can refer the readers to the EC Smart Specialisations Platform as well as the European Commission's Smart Specialization Platform, organised by the Joint Research Centre (IPTS) in Seville which provides an opportunity to help with the innovation process [24, 25].

Smart specialisation strategy which would lead to the specialisation in innovation and smart development policy of countries and regions can be outlined in a step-by-step guide (Figure 1).

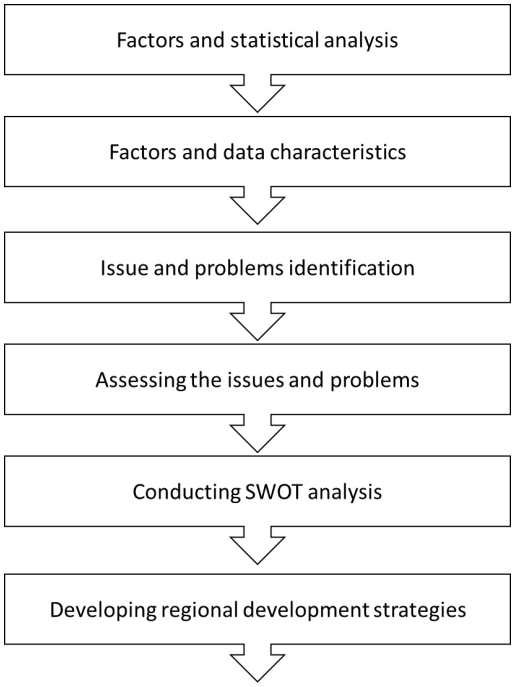

Fig. 1. Smart specialization of countries and regions: a step-by-step guide

One can see that the guide presented above contains six interconnected steps that range from the statistical and factual analysis of factors describing economic, social, political, environmental and institutional spheres in the given regions or countries to the characteristics of these factors, their careful analysis and assessment through the identifying their strengths and weaknesses and developing targeted strategies for the sustainable regional and national development.

For example, back in 2016, the report was presented in the Austrian Research and Technology Report, which contains a chapter on Smart Specialization in Austria. In 2016, a group of national and regional governments and experts presented a report on the role of specialisation in innovation policy, which aims to provide a framework for the development of a smart specialisation strategy for the Austrian research and technology sector. Initiated partnership between the Austrian Research and Technology Agency (ARA) and the Federal Office for Innovation and Research (OER). This is a growth strategy based on the identification of priorities, objectives and regional policy measures as well as the development of a strategy for the implementation of this strategy in Austria [26].

All in all, it becomes apparent that the degree of intelligence (or “smartness”) of a region is represented in the usage of its human, structural and relationship capital and to integrate

various actors into the region's innovation practices. It is vital to make use of regional strengths and capacities, and this must be linked to the development of the regional economy and the integration of various sectors. Building on existing regional competence, resources, knowledge and strengths, as well as the collective process of entrepreneurial breakthroughs involving regional stakeholders, the task is to identify specialised regions in order to build a sustainable competitive advantage. Smart specialization is on Europe's transformation agenda for the next decade, and it requires a well-organized regional ecosystem to function effectively. In this article, we argue that harnessing the new third role of universities is key to maintaining an intelligent and effective regional innovation ecosystem. Universities, private and public institutions can play a role in making smart regions smarter by helping different regional actors work together effectively, according to a new report from the European Commission's Economic and Social Research Office.

Since the 1990s, cities and regions have been looking for ways to improve quality of life through technology, and have often busily adapted the smart label to describe activities to improve the performance of their local economies. In this article, we look at what intelligence means in terms of how it works in practice and how it improves the quality of life in a region. We describe how to focus on the contribution's universities make to smart regions and how to use the experience of the Finnish region of Helsinki to develop and implement an intelligent specialisation strategy for the development of smart regional innovation ecosystems. Smart specialisation is a policy framework aimed at finding ways to promote entrepreneurial processes that seek to develop a region's indigenous potential. Its origins are linked to the development of smart regional innovation ecosystems in the Helsinki region, the Finnish capital. For example, the German Government encourages its science and research institutions to recognise the potential of intelligent specialisation as a key component of their economic development strategy. It is a bottom-up approach to promoting growth and employment, focusing on the development of regional innovation ecosystems, focusing on innovation and innovation - structural change. By creating regional values in a civil society and economic context, universities and science research centres can be an integral part of the innovation ecosystem and of innovation-driven structural change.

4 Specialization of the regions

The focus must be on regional innovation ecosystems to implement research and innovation strategies based on the principles of the European Commission's Intellectually Specialised Regional Innovation Strategy. This focus is not on a "regional innovation approach," but on industry - that is, research and innovation in the fields of science, technology, technology and mathematics (STEM) and economics. This will be complemented by regional information models that combine physical and digital infrastructure through a joint innovation platform and research in 2014-2015. Design was supposed to improve the integration of digital technologies and enabling research and innovation in science, technology and mathematics and economics [27-30].

Innovation policy and practice are increasingly anchored in three important institutional areas. Universities play a more important role in innovation and create favourable conditions for an open innovation mentality. There is an accelerating institutional movement that is helping to create innovation in the public and private sectors. Institutional areas fulfil traditional functions and fulfil the new roles required for co-design, such as research and development. The instrument for financing innovation is the public sector, which should be strengthened by introducing a new public-private partnership model for financing research and development. A smart policy mix that allows synergies seems to be the key to the success of the regional innovation strategy in Bavaria. The results contain an inter-ministerial approach, but no evidence of assumptions. Thus, despite the shared competence in research

and development and the importance of innovation as a key component of economic development, the Regional Innovation Strategy falls short of its potential as the basis of a regional strategy. Lander, which is at the beginning of its intelligent specialization and suffers from a fragmented economic structure, discusses the common vision of the stakeholder process. The inter-ministerial approach, based on working groups (predominantly German states), requires that competencies are defined even if they are in a ministry. In a ministerial structure, the responsible ministry is often advised by the Ministry of Economy and Finance and the Ministry of Economic Development and Trade.

With regard to that, innovation centres need actors who take a long-term view of their role and focus their efforts on building the partnerships necessary for systemic and mutual success. This leads to the creation of a strategic strategy of intellectual specialisation in the region, with a focus on smart cities and smart infrastructure. To meet these societal challenges, decision-making must be reviewed and experimented with the best international knowledge, cooperation and expertise, and the skills and methods needed to support decision-makers. It also requires taking the lead in fully harnessing digitisation to create partnerships and a new working culture that supports the development of smart cities, smart infrastructure and smart technology. This will show how the enabling success factors can be effectively implemented and the Triple Helix model modernised to improve the approach of the knowledge triangle.

With billions of euros invested in infrastructure and buildings, much more is on the way, and this type of element of the process is crucial to creating a mechanism that is needed to increase renewal capital and maximize the emerging enablers of modern urban development: advanced technological solutions, gradual convergence of PPP intelligence, accumulated design expertise, and the development of smart infrastructure. These are the mechanisms needed to increase capital renewal, maximize the benefits of emerging enablers, advanced technology, the advancement of technological solutions, rapidly converging and gradually accumulated intelligence and smart technology for modern urban development. The evolving urban ecosystem, with its ever-changing needs and patterns of behaviour, must be able to respond to the needs of its citizens, its environment and its people.

5 Conclusions and outcomes

Overall, it is clear that smart and sustainable specialization of regions and territories is crucial for achieving their competitiveness and balanced sustainable development. This approach is in accord with the modern transition to the sustainable economy that is marked by the regional and territorial specialization and digitalization and which constitutes the most popular and rapid pathways for the sustainable regional development. Social and political transformative potential can be created using the smart specialization which in turn would boost social innovations and smart potential.

The examples from the European Union countries or China shown in this paper confirmed that social innovations and smart specialization might influence the sustainable growth of countries and regions with a special focus on building an efficient economic, social and institutional environment for the benefits of all agents on the market.

Smart specialization of countries and regions is desirable since it might help them to better integrate into the global economic space that is market by the digitalization and interconnectedness in the universal information and communication systems. Moreover, it would help them to promote their social, economic, environmental and political development that would create favourable conditions for the life of their citizens.

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References

1. P. Kraus, P. Stokes, S. Cooper, Y. Liu, N. Moore, B. Britzelmaier, S. Tarba, Entrepreneurship & Regional Development, **32(7-8)**, 629-653 (2020)
2. Q. Yuan, C. Cheng, J. Wang, T. Zhu, K. Wang, Applied Energy, **268**, 114876 (2020)
3. S. Kalyugina, W. Strielkowski, L. Ushvitsky, E. Astachova, Journal of Security & Sustainability Issues, **5(2)**, 297-304 (2015)
4. V. Chernova, A. Zobov, E. Degtereva, Z. Golodova, V. Starostin, International Journal of Economic Research, **14(4)**, 259–269 (2017)
5. R. Jucevičius, V. Juknevičienė, J. Mikolaitytė, D. Šaparnienė, Systems, **5(2)**, 27 (2017)
6. O. Romanova, G. Korovin, E. Kuzmin, Espacios, **38(59)**, 25 (2017)
7. T. Plėta, M. Tvaronavičienė, S. Della Casa, K. Agafonov, Insights into Regional Development, **2(3)**, 703-715. (2020)
8. P. Balland, R. Boschma, J. Crespo, D. Rigby, Regional Studies, **53(9)**, 1252-1268 (2019)
9. E. Uyarra, B. Ribeiro, I. Dale-Clough, European Planning Studies, **27(12)**, 2359-2375 (2019)
10. W. Strielkowski, M. Krejcí, I. Čabelková, Business: Theory and Practice **16(3),** 304-315 (2015)
11. A. Leckel, S. Veilleux, L. Dana, Technological Forecasting and Social Change, **153**, 119891 (2020)
12. E. Kopczynska, J. Ferreira, Journal of the Knowledge Economy, **11(2)**, 530-557 (2020)
13. I. Szerb, R. Ortega-Argilés, Z. Acs, E. Komlósi, Papers in Regional Science, **99(5)**, 1413-1457 (2020)
14. C. Serbanica, D. Constantin, Habitat International, **68**, 55-63 (2018)
15. G. Secundo, V. Ndou, P. Del Vecchio, G. De Pascale, Technological Forecasting and Social Change, **153**, 119917 (2020)
16. W. Morrison, Current Politics and Economics of Northern and Western Asia, **28(2/3)**, 189-242 (2019)
17. W. Fan, Y. Hao, Renewable Energy, **146**, 598-609 (2020)
18. M. Adler, *Measuring social welfare: An introduction* (2019)
19. W. Strielkowski, E. Lisin, E. Astachova, Entrepreneurship and Sustainability Issues, **4(4)**, 591-600 (2017)
20. A. Bari, Procedia Engineering, **194**, 5-11 (2019)
21. Brent, Z. W., Barbesgaard, M., & Pedersen, C. (2020). The Blue Fix: What's driving blue growth? Sustainability Science, 15(1), 31-43.
22. J. Sörvik, J. Teräs, A. Dubois, M. Pertoldi, Regional Studies, **53(7)**, 1070-1080 (2019)
23. R. Hassink, H. Gong, European Planning Studies, **27(10)**, 2049-2065 (2019)
24. F. Mazzoni, Insights into Regional Development, **2(3)**, 661-676 (2020)
25. European Commission, *https://s3platform.jrc.ec.europa.eu* (2021)
26. Austrian Research and Technology Report, *https://www.bmbwf.gv.at* (2019)
27. F. Tödtling, M. Trippl, European Planning Studies, **26(9)**, 1779-1795 (2018)
28. R. Thapa, T. Iakovleva, L. Foss, European Planning Studies, **27(12)**, 2470-2490 (2019)
29. E. Lisin, W. Strielkowski, V. Chernova, A. Fomina, Energies, **11(12)**, 3284 (2018)
30. A. Kasych, M. Vochozka, Marketing and Management of Innovations, **2**, 298-305 (2017)