| Economy Transdisciplinarity Cognition<br>www.ugb.ro/etc | Vol. 22,<br>Issue 2/2019 | 15-22 |
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# *The Implementation of the Smart Specialization Concept in the Republic of Moldova: the Importance, the Undertaken Steps and the First Results*

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***Abstract:*** *The concept of smart specialisation has become the key-element of the European Union's cohesion policy and an ex-ante condition for accessing the structural funds. The elaboration and implementation of the smart specialisation strategy (S3) become very important in the Republic of Moldova, in the context of its aspirations for European integration, and because the concept of smart specialisation supports the reorientation of RDI policies towards those research activities that offer results with economic relevance. In this context, the process of developing S3 has started in our country. This is a complex process, which involves different actors and requires their joint efforts. The paper analyses the actions taken and the results obtained at the current stage, such as mapping of economic, innovation and scientific potentials, identifying the preliminary priority areas for smart specialisation with potential for economic development (energy, information and communication technologies, agriculture and food processing, biomedicine and biopharmaceuticals), identifying the main niches for smart specialisation for these areas through the first application of entrepreneurial discovery process, as well as the actions to be undertaken for the successful development and implementation of S3 in our country.*
***Keywords:*** *smart specialisation strategy, innovation, economic transformation*

## Introduction

With the development of knowledge-based economy, research, development and innovation (RDI) become key elements of economic growth and competitiveness, and those who invest in research develop competitiveness both in the domestic and foreign markets. Based on this axiom, several countries of the world have declared innovation as a state priority. The implementation of smart specialisation strategies has become an effective tool for invigorating RDI, channelling the efforts of all stakeholders (academia and research community, government agencies, civil society) in identifying and solving economic and societal problems, increasing the impact of RDI on social and economic development.

Smart specialisation strategies have become a key element of the European Union's cohesion policy and an ex-ante condition for accessing structural funds. The implementation of these strategies contributes to economic growth and efficient use of resources. This process is just beginning in the Republic of Moldova. Only the first stages have been completed: mapping of economic, innovative and scientific potential, identifying the preliminary priority areas for smart specialisation with potential for economic development, and performing the first EDP exercises. Research and actions related to the implementation of the concept of smart specialisation in our country will continue until the development of an appropriate policy mix, and the elaboration of some efficient mechanisms for monitoring and evaluation of their implementation.

An extensive research tool was used to conduct research, including economic methods, statistical analysis, benchmarking, induction and deduction methods, dialectical and systemic methods,

optimization method, and scenarios and so on.

## 1. Smart Specialisation in the European Context: from Concept to Policies

Sustainable economic development and sustainable growth are increasingly dependent on the innovation and transformation capability of the economies, including the regional ones, in order to adapt to an ever-changing and increasingly competitive environment. In such conditions, much greater efforts are required to create systems able to stimulate innovation, research and development, as well as the spirit of innovative entrepreneurial development. In the context of the Europe 2020 Strategy and the Innovation Union Initiative, the European Union has taken many steps to achieve this goal, with particular emphasis on smart specialisation (S3). This concept has been embedded and has become a key element of the European Union's cohesion policy, being an effective tool in implementing the European strategy for smart and sustainable growth favourable to inclusion.

According to Regulation (EU) No 1303/2013 of the European Parliament and the Council of 17.12.2013[10] *„smart specialisation strategy"* means national or regional innovation strategies that set priorities for creating competitive advantages by developing strengths appropriate to research and innovation and by correlating them with the needs of enterprises in order to coherently address emerging opportunities and market development, avoiding duplication and fragmentation of efforts; such a smart specialisation strategy may take the form of a strategic policy framework in the field of research and innovation at national or regional level or may be included in such a framework. The Organization for Economic Cooperation and Development (OECD) uses the same notion to describe the industrial and innovation frameworks for regional economies, which aims to illustrate how public policies, framework conditions, but especially investment policies in the field of research, development and innovation can influence the economic, scientific and technological specialisation of the region and, consequently, productivity, competitiveness and economic growth. [5]

The concept of smart specialisation was originally developed by the high-level „Knowledge for Growth" Expert Group [2], convened in 2005 at the initiative of European Commissioner for Research Janez Potočnik, to get advised on: the contribution that knowledge can make to sustainable growth and prosperity, policies for promoting the creation, dissemination and use of knowledge, and also the role that various actors can play in stimulating a knowledge society. Instead of "top-down" approaches to policy making, the authors propose an „entrepreneurial discovery" process that can reveal the country or region where the best results in terms of science and technology were achieved. In this learning process, entrepreneurs are most likely to play key roles in discovering some promising areas of specialisation. Later on, one of the authors of the concept, Dominique Foray, explained the difference between Smart Specialisation and Smart Specialisation Strategy (RIS3). The first concept expresses a process of diversification through the local concentration of resources and competences on a number of new areas representing possible ways of transforming productive structures, while the second concept means the implementation of a political process designed to facilitate this dynamics, when it cannot develop spontaneously [3]. An essential condition for the process of smart specialisation is the presence of a long-term vision both from the decision-makers, but also from the various actors involved, including the business and academia environment.

As a result, in 2010, the European Commission adopted the Communication to the European Parliament and the Council „Regional Policy contributing to smart growth in Europe 2020" [9], calling on the Member States to develop Smart Specialisation Strategies (RIS3). In the context of these considerations, but also based "on-the-ground" evidence of the European states/regions that have demonstrated sustainable economic growth based on investments in research and innovation activities (mainly innovation leaders according to the European Innovation Scoreboard and Regional Innovation Scoreboard), the concept was incorporated in the European Cohesion Policy (2014-2020 budget cycle) in order to stimulate regional economic transformation. Being included as an ex-ante condition in the cohesion policy 2014-2020, RIS3 became the basis for investment in research and innovation through the European Regional Development Fund. This concept is successfully implemented in the European Union member states, becoming an important factor in the economic transformation based on innovation.

## 2. Fundamental Benchmarks of the Concept of Smart Specialisation

The concept of smart specialisation focuses on identifying: the *unique features and strengths of each country/region, competitive advantages* of each region; *cognitive specializations*, most appropriate for their innovation potential; the involvement of cooperating *companies, research centres and universities*, in order to identify the most promising areas of specialisation; the *cooperation of stakeholders and resources* around a vision focused on excellence in the development of the relevant field.

Smart specialisation refers to a *new generation of research and innovation policies* that go beyond investment in research and development and strengthens the overall capacity for innovation. [12, 14] The concept of smart specialisation is based on two key integrated visions:

- *specialisation,* meaning that it focuses on *differentiation*, concentrates on competitive advantages, emerging opportunities, specific niches that can generate added value in the value chain; on *concentrating resources on priorities* to ensure „critical mass/critical potential"; *synergies* between different levels of the government (national-regional, intersectoral), technological connections; *local economic transformation* (improving traditional economic sectors through more valuable activities; targeting a strategic approach to territorial development);
- *smart development*, which supposes the analysis *based on facts* (analysis of the existing potential and bottlenecks in certain regions, development prospects, etc.), *on the dynamic process of entrepreneurial discovery* based on bringing together key actors around a common vision („bottom-up" decision, not the opposite – „top-down" decision), *on all forms of innovation,* not only knowledge based on technology, but also marketing, management, etc.; an *ecosystem approach* focused on creating a favourable environment for changes, ensuring the efficiency of the institutions involved.

In 2012, the Joint Research Centre of the European Commission (JRC) developed the Guide to Research and Innovation Strategies for Smart Specialisation (RIS3) [4], which contains the steps and methodology for developing these strategic planning documents. The Guide sets out six steps to develop a national/regional RIS3 (Figure no. 1):

- *analysis of the national/regional context and potential for innovation* (discovering engines for social, economic and innovation growth, competitive advantages and identifying the existing disadvantages;
- *establishing an inclusive governance structure* (inclusive, participatory and interactive process, centred on entrepreneurial discovery);
- *creating a vision for the region' future* (common defining of innovative areas and determining how they can be supported);
- *identifying development priorities for the country/region* (identification of a limited number of priorities/areas with S3 potential for investment concentration);
- *defining a coherent policy mix* (choosing the appropriate tools for achieving the goals);
- *integrating monitoring and evaluation mechanisms* (verifying the efficiency of S3 implementation and achievement of the set goals.

According to the Guide to Research and Innovation Strategies for Smart Specialisation (RIS3), these strategies represent integrated and geographically located agendas of economic transformation that meet the following characteristics [4]:

- they concentrate the supporting and investment policies on national/regional key-priorities, the challenges and needs for knowledge-based development, including relevant ICT measures;
- RIS3 is based on the strengths of each country/region, competitive advantages and potential for excellence;
- they support innovation based on technology and practice, and seek to stimulate the private sector investment;
- the participants are fully involved and encourage innovation and experimentation;
- they are evidence-based and include sophisticated monitoring and evaluation systems.


**Figure no. 1. RIS 3 development steps**

Smart specialisation assumes improvement of the allocation of public investment to finance research, development and innovation activities, to increase competitiveness, productivity and economic growth mainly through entrepreneurial activities. Smart specialisation strategies can be seen as a combination of the elements of innovative and industrial policies, based on a „bottom-up" approach (the process of entrepreneurial discovery), flexibility in implementation and transparency. The purpose of RIS3 is to promote experimentation in the existing and new areas/niches of activity and to adapt the policy mix according to the results of these experiments. At the same time, the continuous process of smart specialisation supposes making complicated decisions in a period of difficult transition, under severe budgetary constraints (for example, stopping some project financing or allocating resources to stimulate emerging technologies).

The impact of implementing smart specialisation strategies in the European Union member states is significant, these contributing to strengthen the synergy between different European Union policies (national, regional), to boost public and private sector investments, as well as to use efficiently the European structural and investment funds. Since 2013, over 100 smart specialisation strategies have been developed by EU member countries. The following countries recorded relevant experience in this regard: France (Centre-Val de Loire region in the fields of energy storage, biopharmaceuticals, environmental engineering, tourism); Finland (development of smart cities, development of smart transport solutions); Spain (Extremadura - distinct cheese type „La Torta del Casar", with the active involvement of farmers, shepherds and other local actors); Romania (Western region - creation of incubators and other support structures for the development of entrepreneurship, and creation of innovation companies in the digital sector); Poland (Podkarpackie Voivodeship - bringing together many actors of the Polish aviation industry, setting up the Aviation Training Centre in Rzeszow for an efficient liaison between the regional industry and the academic sector). [13]

The importance of developing this concept is mentioned in the Communication from the Commission to the European Parliament and the Council *„Strengthening Innovation in Europe's Regions: Strategies for resilient, inclusive and sustainable growth"* of 18.07.2017 [14], in which the S3 role is emphasized and the next reforms in the field are pointed out.

More than EUR 67 billion is offered, at European level, to support the development of such strategies from European structural and investment funds, as well as from national and regional sources. At the same time, it is estimated that, by 2020, based on smart specialisation strategies, 15000 new products will be provided in the market, 140000 new *start-ups* and 150000 new jobs will be created. [13]

## 3. Smart Specialisation in the Republic of Moldova

The need to implement in the Republic of Moldova the concept of smart specialisation is generated, on the one hand, by the internal and external challenges that the country faces in terms of economic development, and, on the other hand, by the deficiencies that it encounters in ensuring sustainable social and economic development, synchronizing national, regional and sectoral policies with research and innovation policies, transforming research, development and innovation activities into a viable and efficient tool for economic transformation.

Among these deficiencies the following can be mentioned:

- developing „top-down" strategies; stakeholders, in particular the business environment, are involved to an extremely limited extent, participating only at the level of consultations on the already proposed projects,
- the priorities set in research and sectoral policies are not convergent,
- societal challenges are only tangentially addressed in policy documents,
- priorities set forth in the policy documents are general in nature and are not anchored locally,
- low funding of the research sector, it is dispersed over a wide range of priorities,
- public funding is allocated, in particular, to public research institutions, and the funding of private sector research is extremely low,
- the policy mix is limited to R&D in the public sector and to the marketing of R&D products of the public sector,
- discrepancies between the development of strategies and their implementation, and so on.

The existence of several strategic documents in the Republic of Moldova, with non-convergent priorities and limited to their own sectors of activity, can lead to the diffusion of resources that are already limited, and given the absence of a critical mass in areas important to the modern economy, this limits the impact of public interventions and investments.

The Report of the foreign experts team, who evaluated the research and innovation system of the Republic of Moldova in 2015-2016 [8], recommends to enhance the integration of research and innovation policy in the overall economic policy strategy; to improve the synergy between research and innovation strategies, as well as to strengthen priorities setting through increased stakeholder involvement. At the same time, the experts have recommended urgent reviewing of the framework conditions for innovation by implementing a coherent set of measures aimed at creating and stimulating a favorable environment for the involvement of companies in research and innovation activities.

Since 2016, a series of actions have been initiated and carried out in the Republic of Moldova to raise public awareness of the concept and importance of smart specialisation, the impact of smart specialisation strategies on economic growth and the efficient use of resources, regional development. Thanks to the support of the EU Joint Research Center, workshops have been organized [11], and a group of local experts (part of which is one of the authors of the present paper - L.Savga) was set up. This expert group was involved in the evaluation of the state-of-the-art in the field of research, development and innovation policies and economic development, as well as their implications on economic development. The local expert group together with foreign experts participated in mapping the economic, innovation and research potential of the Republic of Moldova, and took part in the first exercises of entrepreneurial discovery process.

As mentioned above, the first step in developing the smart specialisation strategy is *to analyse the national/regional context and the potential for innovation*. In this regard, with the support of the international experts of the Joint Research Center of the European Commission and the local expert group, the mapping and identification of the regional potential of the Republic of Moldova was carried out in order to identify the strengths and the industrial potential, as well as the innovation and research potential of the business area for the identification of the smart specialisation priorities. The results were presented at the Conference „Smart Specialization: the Engine of Economic Growth of the

Republic of Moldova", organized as part of the Moldova Businees Week on October 6, 2017, [7] and then were published by JRC „Mapping for smart specialization in transition countries: Moldova, The economic, innovative and scientific potential in the Republic of Moldova" [6].

As part of mapping of *the economic potential* (which was based on the analysis of employment, turnover and wages), the areas with major economic potential and priority for smart specialisation were identified, among them: agriculture and food processing; textiles; renewable energy; ICT.

Following these studies, subsequently, SIRIS Academic, with the support of the Joint Research Center, aiming at mapping of the research and innovation ecosystem of the country [1], has carried out the characteristic of the preliminary priority areas for smart specialisation in Moldova.

Thus, the following *top priorities* were highlighted: chemical industries, materials and nanotechnology (the preliminary priority is science-oriented); health, biomedicine and pharmaceutical products (balanced preliminary priority); agriculture and food processing (the priority is focused on technology and innovation), the following were outlined as *intermediate* priorities: electric and electronic technologies (the priority is focused on science); production technologies and heavy machinery (technological and innovative priority); ICT (slightly science-oriented priority); environmental industries, services and sciences (the priority is focused on technology and innovation); energy (balanced preliminary priority), and the following were assigned to the category of *low priorities*: vulcanized and filed materials; textile, apparel, footwear and leather goods; paper industry; furniture.

The next step in developing a smart development strategy is *entrepreneurial discovery process*, in which niches of smart specialisation, specific to each region, have to be identified.

In June 2019, following the actions taken in the context of the development of S3 in the Republic of Moldova (mapping of the economic, innovation and scientific potential; identification of the preliminary priorities for smart specialisation), the first four workshops on entrepreneurial discovery process were organized at the national level, in the following areas: *energy, information and communication technologies, agriculture and food processing, biomedicine and biopharmaceuticals* (one of the authors of this paper, L.Savga, was trained as facilitator in two workshops), where the following potential areas of smart specialisation were identified (Table no. 1).

**Table no. 1**
**Potential areas for smart specialisation in the Republic of Moldova, identified within EDP**

| Areas | Potential areas of smart specialisation |
|---|---|
| ***Energy*** | • Energy efficient technologies<br>• Alternative energy sources<br>• Heating solutions |
| ***ICT*** | ▪ Micro/nanomaterials and electronic engineering<br>▪ Interoperability, open data and e-Infrastructures<br>▪ Software engineering, Mobile apps, cloud computing |
| ***Agriculture and food processing*** | ▪ Advanced biotechnologies for agriculture<br>▪ Sustainable agriculture<br>▪ Value-added food products |
| ***Biomedicine& Biopharmaceuticals*** | ▪ Biomedicine<br>▪ Biopharmaceuticals<br>▪ Bioinformatics&E-health |

*Source: EDP results, Ministry of Education, Culture and Research*

The process of entrepreneurial discovery will continue. It is necessary to involve actors relevant to the respective fields, who, through their knowledge, vision and experience, can contribute to identifying the most promising areas of smart specialisation. The results of the entrepreneurial discovery process play a decisive role in the design of the smart specialisation strategy, as it allows the verification and specification of the priority areas of smart specialisation based on the consensus between all interested stakeholders.

The next stage of implementing the S3 concept in Moldova will focus *on the policy mix*, development of the smart specialisation strategy (at national or regional levels), provision of sectoral and regional policies with S3 priorities, and selection of an appropriate set of tools to achieve the set goals.

## Conclusions

The implementation of the concept of smart specialisation has demonstrated its opportunity in the EU countries, becoming an ex-ante condition for accessing the structural funds.

The development of the smart specialisation strategy has become a necessity in the Republic of Moldova, due to the imperative to ensure the convergence between R&D policies and policies of national, sectoral and regional economic development, and to subordinate research priorities and activities to the priorities and needs of the real economy sector.

The steps undertaken by the authorities in the recent years and the existing research environment gave start to a number of actions in this field, the following being carried out: mapping of economic, innovative and scientific potential; identification of the preliminary priorities for smart specialisation; organisation of the first entrepreneurial discovery exercises, the first results being obtained regarding the priority areas and the areas of smart specialisation. But an extensive process of specifying the niches of smart specialisation within EDP and their integration into the policy mix is yet to be carried out.

The implementation of the concept and strategy of smart specialisation at national and/or regional level in the Republic of Moldova would facilitate the process of economic transformation, based on capitalizing on the innovative potential of the country and each region, and would encourage transregional cooperation on this dimension.

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