



## **Weekly Briefing**

**Slovakia economy briefing:  
The science and technology innovation in Slovakia  
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# The science and technology innovation in Slovakia

## Overview

Innovation enables countries to be more competitive, more adaptable to change and to support higher living standards. It provides the foundation for new businesses and new jobs and helps address pressing social and global challenges, such as health, climate change, and food and energy security (OECD, 2018). The rise of digital technologies, such as Artificial Intelligence or the Internet of Things, and their increasing convergence with the physical world has brought about rapid and deep changes in the way innovation is created and diffused, redefining entire industries (Correia et al., 2018). According to European Commission (2020), Slovakia is a moderate innovator and during the last decade, its performance increased relative to that of the EU in 2012. Based on the results, the strongest innovation dimensions where Slovakia performs above the EU average are Employment impacts and Sales impacts, especially in employment in fast-growing enterprises of innovative sectors, sales of new-to-market and new-to-firm product innovations, medium and high-tech product exports, and new doctorate graduates. On the weaker side, there are Finance and support and Innovators and Intellectual assets. Lowest indicators include venture capital expenditures, R&D expenditures in the business sector, lifelong learning, and opportunity-driven entrepreneurship (European Commission, 2020). Also, as Correia et al. (2018) points out, one of the crucial reasons for the low innovation performance in CESEE region (including Slovakia) is low investment in intangible assets, such as R&D. CESEE countries are not making sufficient strides to improve their R&D investment and continue to lag significantly behind.

Science and technology innovations in Slovakia are currently governed by these major documents: 1. Through knowledge towards prosperity – Research and innovation strategy for smart specialization of the Slovak Republic (also called “RIS3”), 2. Action plan for the implementation of the Research and innovation strategy for smart specialization of the Slovak Republic, and 3. Implementation plan for the Research and innovation strategy for smart specialization of the Slovak Republic. The aim of RIS3 is to connect research, development and innovation with the immediate needs of practice, while the basic principle of this connection is the transition from a policy of dominant support of basic research to a state where the share of public resources allocated to basic research will be around 30% and the vast majority of public and private resources will be available in mutual combination respecting the criteria of demand from private enterprises and customer practice. To fulfill the structural change of the Slovak

economy towards growth based on increasing innovation capacity and excellence in R&D to support sustainable growth of employment and quality of life of Slovak citizens, four strategic goals were set. In order to achieve these goals, three basic areas of specialization were identified and approved by the government of the Slovak Republic (Implementation plan, 2017):

- Areas of economic specialization, based on traditional anchored economic sectors, which have the potential to significantly influence the fulfillment of the strategic objectives of RIS3 (automotive and mechanical engineering, consumer electronics and electrical appliances, information and communication products and services, production and processing of iron and steel).
- Promising areas of specialization that are fast-growing and show a high potential for development for the economy (automation, robotics and digital technologies, processing and recovery of light metals and their alloys, production and processing of polymers and progressive chemicals (including smart fertilizations), creative industries).
- Areas of specialization in terms of available scientific and research capacities (materials research and nanotechnology, information and communication technologies, biotechnology and biomedicine, agriculture and the environment, including modern environmentally friendly chemical technologies, sustainable energy).

### **Organizations involved in research and innovation policies**

Based on the above mentioned documents focusing on the science and technology innovations in Slovakia, following table lists the most important institutions responsible for certain areas of science and technology innovations together with their main activities.

**Table 1 List of organizations involved in innovation**

<b>Organization</b>	<b>Main activities</b>
Innovation Fund of the Ministry of Economy of the Slovak Republic (Inovačný fond Ministerstva hospodárstva SR)	<ul style="list-style-type: none"> <li>• promotion of sustainable development in science, research and development</li> <li>• accelerate innovation development</li> <li>• promotion of development and conceptual studies, setting out the main areas of use of scientific, research and development solutions</li> </ul>
Ministry of Economy (Ministerstvo hospodárstva)	<ul style="list-style-type: none"> <li>• central body of the state administration for selected economic activities: industry with the exception of food industry, construction products and manufacture of construction material, power engineering, manufacturing and supply of heat and gas, exploitation and treatment of raw materials, support to SMEs, policies related to creation of</li> </ul>

	<p>business environment and support to business environment, domestic and foreign trade, tourism and consumer protection and administration and privatization of the state property</p> <ul style="list-style-type: none"> <li>• key government body in field of innovation development</li> </ul>
<p>Ministry of Education, Science, Research and Sports (Ministerstvo školstva, vedy, výskumu a športu)</p>	<ul style="list-style-type: none"> <li>• central body of the state administration for education, lifelong learning, science</li> <li>• the most important government body in field of science and technology</li> <li>• supports basic and applied research via state budget allocations and competitive grants</li> </ul>
<p>Ministry of Finance (Ministerstvo financií)</p>	<ul style="list-style-type: none"> <li>• monitors efficient use, the fiscal consolidation and long-term sustainability of public finance within the eurozone, compliance with the rules of public funds spending, efficient implementation of EU financial instruments</li> </ul>
<p>Research and Development Agency (Agentúra na podporu výskumu a vývoja)</p>	<ul style="list-style-type: none"> <li>• support to domestic and international R&amp;D projects developed by government research institutes, universities, private enterprises and non-profit organizations</li> <li>• provides sources to support projects developed in the Slovak Republic within international agreements on scientific and technical cooperation and projects within the international and the European programs and initiatives in area of R&amp;D including preparation costs</li> </ul>
<p>Scientific Grant Agency (Vedecká grantová agentúra)</p>	<ul style="list-style-type: none"> <li>• joint advisory body of the Minister of Education and the Slovak Academy of Sciences</li> <li>• advisory body in field of financing basic research and evaluation of research projects</li> <li>• supports basic research in general and institutional finance in particular</li> </ul>
<p>Slovak Academy of Sciences (Slovenská Akadémia Vied)</p>	<ul style="list-style-type: none"> <li>• basic research in selected sciences on nature, technology and society</li> <li>• research teams also participate in the applied research projects</li> <li>• number of (internal) centers of excellence</li> </ul>
<p>Slovak Business Agency (previously Národná agentúra pre rozvoj malého a stredného podnikania)</p>	<ul style="list-style-type: none"> <li>• one of main managers of the Structural Funds projects on innovation and applied research in Slovakia</li> <li>• supports the development and growth of small and medium-sized enterprises (SMEs) to improve the competitiveness of the sector</li> <li>• manages national programs aimed at incubators for research-based spin-offs and fostering R&amp;D activities in SMEs</li> </ul>

<p>Slovak Government Council for Science, Technology and Innovation (Rada vlády SR pre vedu, techniku a inovácie)</p>	<ul style="list-style-type: none"> <li>• expert, advisory, initiative and coordination body of the Slovak government</li> <li>• coordinates the cooperation of public and private sector organizations in ensuring the objectives of the science and technology and innovation policies</li> <li>• comprehensively assesses the materials of central state administration bodies in the field of science, technology and innovation</li> </ul>
<p>Slovak Guarantee and Development Bank (Slovenská záručná a rozvojová banka)</p>	<ul style="list-style-type: none"> <li>• specialized financial institution (joint-stock company) owned by the Ministry of Finance</li> <li>• supports small and medium-sized enterprises on the basis of partnership and cooperation with commercial banks and other institutions supporting this segment</li> </ul>
<p>Slovak Innovation and Energy Agency (Slovenská inovačná a energetická agentúra)</p>	<ul style="list-style-type: none"> <li>• information service for the Ministry of Economy with special focus on innovations and energy sector</li> <li>• gathers processes and disseminates information related to the increase of energy efficiency, using of renewable energy sources, and the development of innovation activities</li> </ul>
<p>Slovak Investment and Trade Development Agency (Slovenská agentúra pre rozvoj investícií a obchodu)</p>	<ul style="list-style-type: none"> <li>• government-funded allowance organization under supervision of the Ministry of Economy</li> <li>• designing and using stimuli to increase the influx of foreign investment</li> <li>• promoting Slovak companies in their effort to transform into high-performance subjects on a global level</li> </ul>
<p>Slovak Parliament (Národná rada Slovenskej Republiky)</p>	<ul style="list-style-type: none"> <li>• constitutional and legislative body of the Slovak Republic</li> </ul>

Source: respective websites.

Note: Slovak name in parenthesis.

## Conclusion

According to Correia et al. (2018), in order to sustain high levels of economic growth in the future, a shift will be required in the growth model of CESEE region countries to a new model that will be increasingly based on innovation. As Correia et al. (2018) stresses: "This innovation imperative will be crucial if rising prosperity is to be sustained and a fall into the middle-income trap is to be avoided. This is particularly important against the backdrop of rapid technological change driven by the rise of digital technologies and their convergence with the physical world that are posed to deeply transform our economies". We note that Slovakia lags significantly behind in low investment in intangible assets, such as R&D as also proposed by European Commission (2020) and Correia et al. (2018). Based on Baláž et al. (2018) assessment

of the research and innovation system in Slovakia, the following challenges should be addressed to reflect the dynamic situation change in the world economy, as well as in Slovak economy:

- Improvement of the research and innovation governance – insufficient coordination and co-operation between ministries and their agencies and also fragmentation of resources for building research and innovation infrastructures are seen as major challenges for Slovakia.
- Improve the quality of the science base – Slovakia ranks among the modest R&D performers within the EU28 in terms of R&D expenditure, and commercial and non-commercial R&D outputs.
- Increase private innovation outputs and R&D investments – dual structure of the Slovak economy impacts patterns of productivity, innovation outputs and R&D spending.
- Strengthen synergies between science and industry – co-operation between the industry and academia is low and these two sectors still remain largely isolated.

## References:

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4. Implementation Plan (2017). Implementation plan for the Research and innovation strategy for smart specialization of the Slovak Republic.
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