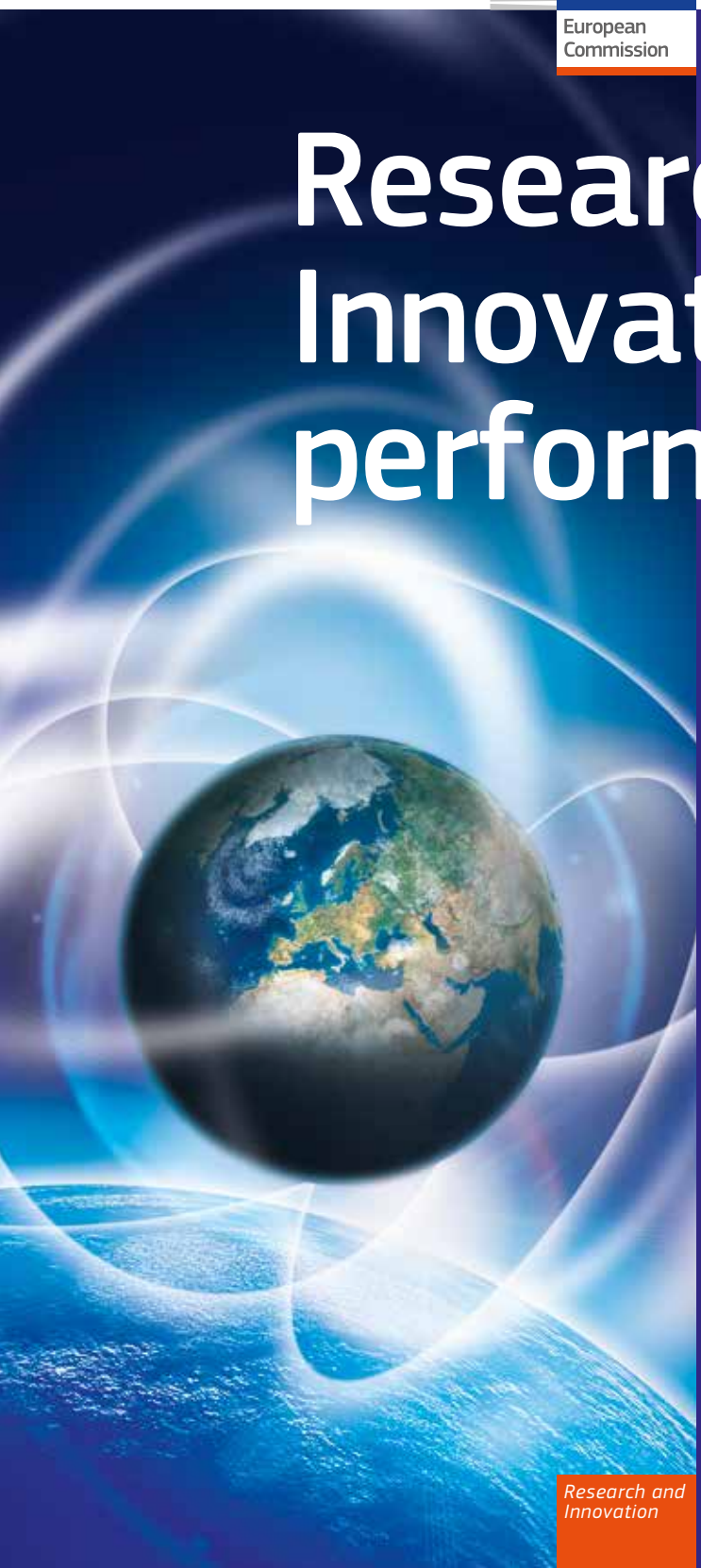
European Commission

Research and Innovation performance in Slovakia

Country Profile

2014



Research and Innovation

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Slovakia

The challenge of structural change to upgrade knowledge in the context of industrial globalisation

Summary: Performance in research and innovation

The indicators in the table below present a synthesis of research and innovation (R&I) performance in Slovakia. They relate knowledge investment and input to performance and economic output throughout the innovation cycle. They show thematic strengths in key technologies and also the high-tech and medium-tech contribution to the trade balance. The indicator on excellence in science and technology takes into consideration the quality of scientific production as well as technological development. The Innovation Output Indicator covers technological innovation, skills in knowledge-intensive activities, the competitiveness of knowledge-intensive goods and services, and the innovativeness of fast-growing enterprises, focusing on innovation output. The indicator on knowledge-intensity of the economy focuses on the economy's sectoral composition and specialisation and shows the evolution of the weight of knowledge-intensive sectors and products.

Key indicators of research and innovation performance	
R&D intensity 2012: **0.82 %** (EU: 2.07 %; US: 2.79 %) 2007-2012: **+12.3 %** (EU: 2.4 %; US: 1.2 %)	*Excellence in S&T*[1] 2012: **25.2** (EU: 47.8; US: 58.1) 2007-2012: **+8.5 %** (EU: +2.9 %; US: -0.2)
Innovation Output Indicator 2012: **85.7** (EU: 101.6)	*Knowledge-intensity of the economy*[2] 2012: **32.0** (EU: 51.2; US: 59.9) 2007-2012: **+0.6 %** (EU: +1.0 %; US: +0.5 %)
Areas of marked S&T specialisations: Food and agriculture, materials, and environment	*HT + MT contribution to the trade balance* 2012: **3.9 %** (EU: 4.23 %; US: 1.02 %) 2007-2012: **+12.2 %** (EU: +4.8 %; US: -32.3 %)

Over the 2007-2012 period, the country's performance achieved modest progress in research and innovation sectors while performance indicators remained below the EU average due to the low levels of R&D inputs corresponding with the low level of knowledge-intensive outputs. Therefore, the Slovak Republic faces the challenge of further developing its R&I system. Currently, the country ranks as the poorest R&I performer and is a moderate innovator which is catching up as regards competitiveness.

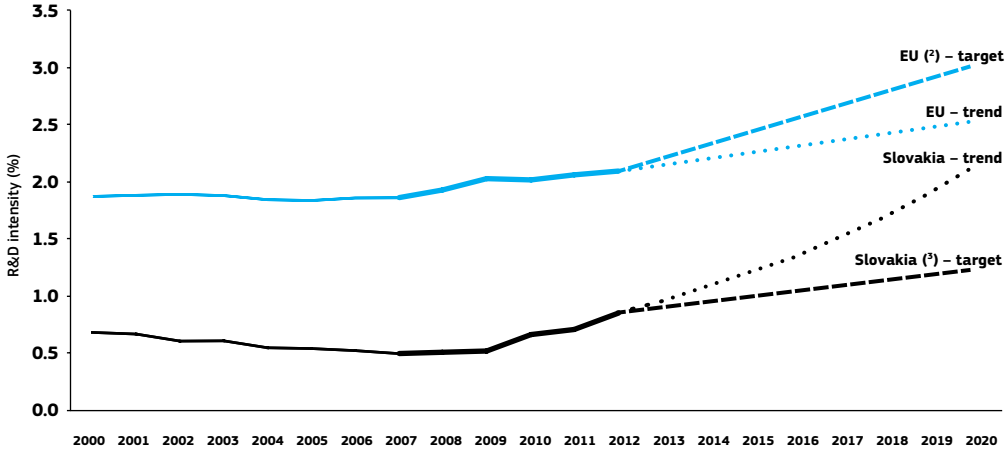
Over the last decade, R&D intensity steadily declined from a peak of 3.88 % in 1989 to 0.82 % in 2012. Slovakia's national 2020 intensity target for R&D is 1.2 %, which may be realistic providing that EU assistance to Slovakia's research system continues, and is combined efficiently with domestic funding and strategy implementation. The most important barrier to developing a strong private R&D sector and promoting innovations in Slovakia is its dual economy, which limits its indigenous R&D capacity in favour of the predominance of foreign multinational companies with high productivity, but lacking any domestic research activities. Thus, the Slovak economy is characterised by very low domestic patent production. For the first time, this weakness has been recognised clearly in the RIS3 (Research and Innovation Strategy for Smart Specialisation) document. The main challenge for the Slovak Republic is to raise knowledge intensity in Slovak firms through investments and spillovers. Moreover, existing public financing is suffering from inefficiency, a significant administrative burden and a lack of transparency concerning the procedures used – including those supporting regional innovation. The Slovak Republic has room to improve its thematic concentration, including stronger coordination between the responsible public authorities, the links between business and science, and the connexion with international S&T networks.

[1] Composite indicator that includes PCT per population, ERC grants per public R&D, top universities and research institutes per GERD and highly cited publications per total publications.

[2] Composite indicator that includes R&D, skills, sectoral specialisation, international specialisation and internationalisation sub-indicators.

Investing in knowledge

Slovakia – R&D intensity projections: 2000–2020 (1)



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: DG Research and Innovation, Eurostat, Member State
Notes: (1) The R&D intensity projections based on trends are derived from the average annual growth in R&D intensity for 2007–2012.
(2) EU: The projection is based on the R&D intensity target of 3.0 % for 2020.
(3) SK: The projection is based on a tentative R&D intensity target of 1.2 % for 2020.

The Slovak Republic has set a national R&D-2020 intensity target of 1.2 %. In 2012, the Slovak R&D intensity was 0.82 % of GDP, below the EU average of 2.07 %. Public sector R&D intensity amounted to 0.48 % and business R&D intensity to 0.34 %. To reach the national target it must raise its annual growth in both public and private R&D investments. Austerity measures to reduce the public deficit affected national R&D funding of the Operational Programme R&D (OPRD), which provided some 80 % of total public support to R&D in Slovakia. The new national intensity target can be achieved providing the right policies are implemented. Overall, the country's R&I system is characterised by a very low R&D intensity, one of the lowest in Europe and also compared to the reference group countries – Czech Republic, Italy, Hungary and Slovenia – with an average of 1.27 %.

However, and in spite of the overall decline in the R&D intensity in the Slovak Republic over the last decade, the Slovak gross expenditure on research and development (GERD) increased from EUR 219 million in 2010 (0.48 % of GDP) to EUR 585.2 million in 2012 (0.82 % of GDP), notably due to financing from EU resources (mainly through the Structural Funds). Between the two programming periods of 2000-2006 and 2007-2013, the Slovak Republic increased its RTDI[3] by 19 %. In the private sector, low R&D expenditure and productivity levels are characteristic of domestic firms, including a significant number of small and medium-sized enterprises (SMEs), and a few large companies. As a result, the production system is dominated by technology imports. In recent years, only modest national funding was allocated to address the low innovativeness among Slovak SMEs. Low shares of domestic innovative enterprises are limiting the country's competitiveness. Therefore, a major challenge facing Slovakia is to raise R&D intensity among its companies.

Slovakia achieved suboptimal performance in the EU's Seventh Framework Programme (FP7) projects. Its participation in FP7 projects in 2007-2013 period reveals a total of 1990 eligible proposals were submitted, with a success rate of 11.49 %, lower than the EU-27 applicant success rate of 22.0 % (E-CORDA database). Structural Funds are another important source of funding for R&I activities. Of the EUR 11.5 billion of Structural Funds allocated to Slovakia over the 2007-2013 programming period, around EUR 1.3 billion (11.3 % of the total) related to RTDI.

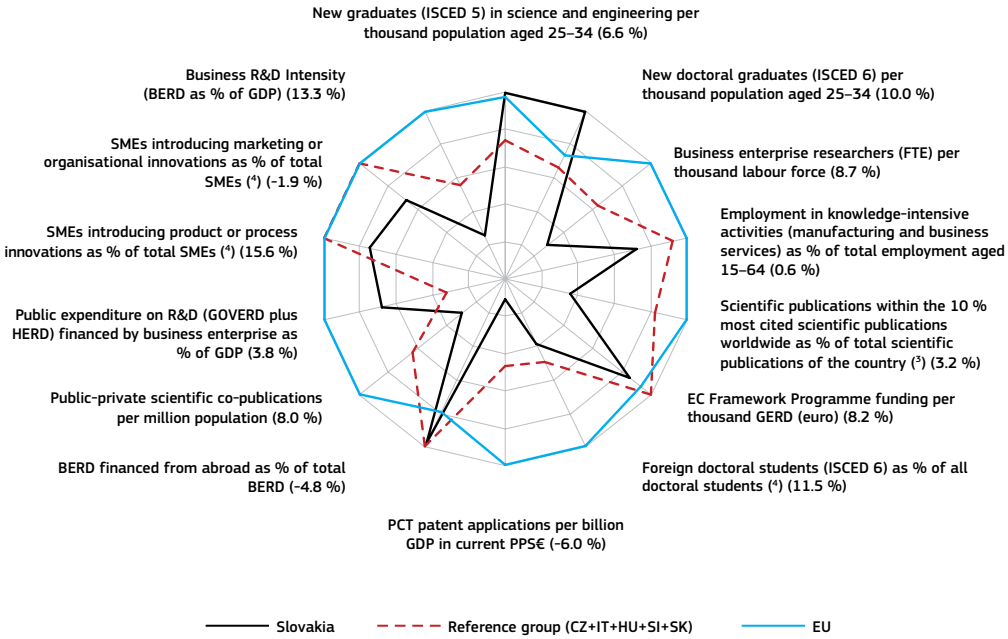
[3] RTDI includes the following sectors: (01) RTD activities in research centres, (02) RTD infrastructures and centres of competence, (03) Technology transfer and improvement of cooperation of networks, (04) Assistance to RTD, particularly in SMEs (and RTD services in research centres), (06) Assistance to SMEs for the promotion of environmentally friendly products and processes, (07) Investment in firms directly linked to research and innovation, (09) Other methods to stimulate research and innovation and entrepreneurship in SMEs, and (74) Developing human potential in the field of research and innovation.

An effective research and innovation system building on the European Research Area

The spider graph below provides a synthetic picture of strengths and weaknesses in the Slovak R&I system. Reading clockwise, the graph provides information on human resources, scientific production, technology valorisation and innovation. The average annual growth rates from 2000 to the latest available year are given in brackets under each indicator.

Slovakia, 2012 ([1])

In brackets: average annual growth for Slovakia, 2007–2012 ([2])



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: DG Research and Innovation, Eurostat, OECD, Science-Metrix/Scopus (Elsevier), Innovation Union Scoreboard.
Notes: ([1]) The values refer to 2012 or to the latest available year.
([2]) Growth rates which do not refer to 2007–2012 refer to growth between the earliest available year and the latest available year for which comparable data are available over the period 2007–2012.
([3]) Fractional counting method.
([4]) EU does not include EL.

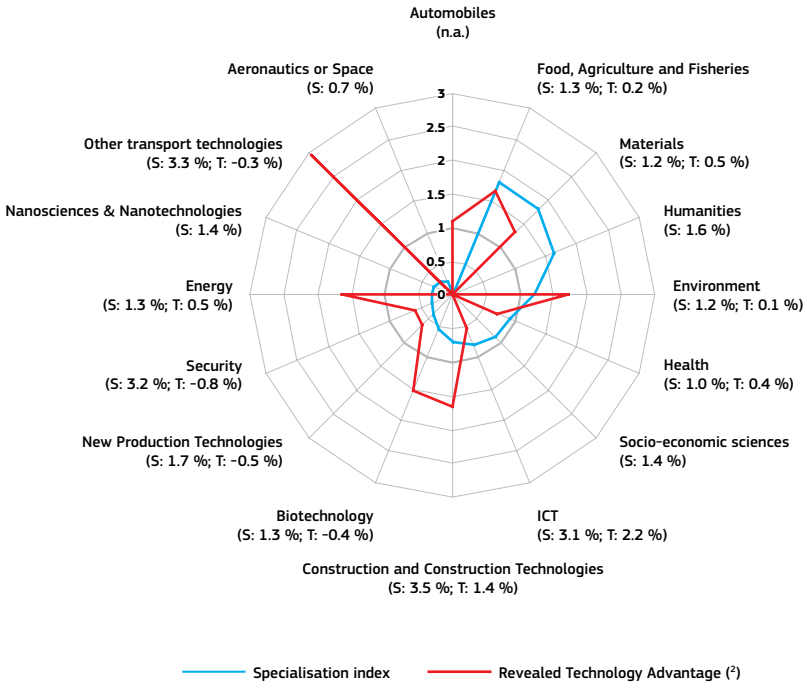
The strengths in Slovakia's R&I system are found in human resources for R&I and in attracting business R&D investments from abroad. There has been a significant increase above the EU average in the number of new graduates in science and engineering and at PhD level as an alternative to unemployment for some tertiary graduates considering the shrinking numbers being employed in the business sector. However, there is need to enhance the quality and efficiency of the higher education system, and to increase the excellence and internationalisation of its universities, as the latter are not visible in major international rankings, and given the low number of scientific outputs.

As regards the reference group, only a few Slovak indicators attain a better or similar position, and can thus contribute to future development. In contrast, the country's main weaknesses lay in business research activities (R&D spending over the 2007-2012 period reached on average 0.34 % of GDP as against the EU figure of 1.30 % of GDP), including very low patenting, numbers of business researchers, and R&D investments as the research field remained rather static and was not matched by technologies. In the public sector, the main challenges concern pursuing improvements in scientific quality and in public-private cooperation in R&D activities.

Slovakia's scientific and technological strengths

The graph below illustrates the areas, based on the Framework Programme thematic priorities, where Slovakia shows scientific and technological specialisations. Both the specialisation index (SI, based on the number of publications) and the revealed technological advantage (RTA), based on the number of patents) measure the country's scientific (SI) and technological (RTA) capacity compared to that at the world level. For each specialisation field it provides information on the growth rate in the number of publications and patents.

Slovakia – S&T National Specialisation ([1]) in thematic priorities, 2000–2010
in brackets: growth rate in number of publications ([3]) (S) and in number of patents ([4]) (T)

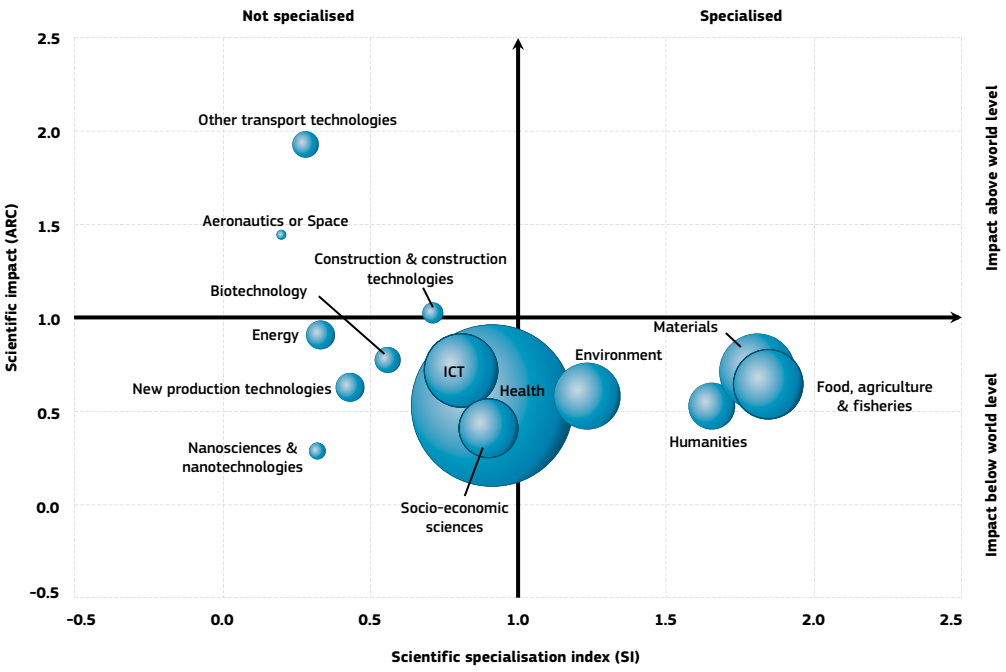


Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Science-Metrix Canada; Bocconi University, Italy
Notes: ([1]) Values over 1 show specialisation; values under 1 show a lack of specialisation.
([2]) The Revealed Technology Advantage (RTA) is calculated based on the data corresponding to the WIPO-PCT number of patent applications by country of inventors. For the thematic priorities with fewer than 5 patent applications over 2000–2010, the RTA is not taken into account. Patent applications in 'Aeronautics or Space' refer only to 'Aeronautics' data.
([3]) The growth rate index of the publications (S) refers to the periods 2000–2004 and 2005–2009.
([4]) The growth rate in number of patents (T) refers to the periods 2000–2002 and 2003–2006.

The graph above shows that the Slovak scientific and technological specialisation in selected thematic priorities is rather unbalanced. Naturally, sectors such as socio-economic sciences and humanities do not lead to any technological production. On the other hand, five other sectors with strong technology advantages are hardly covered by scientific specialisation (i.e. other transport technologies, energy, new production technologies, biotechnology, and construction and construction technologies). In Slovakia, the sectors with the best matches between science and technology are environment, materials, and food, agriculture and fisheries, where progress is quite well balanced, too.

The graph below illustrates the positional analysis of Slovakian publications showing the country's situation in terms of scientific specialisation and scientific impact over the period 2000-2010. The scientific production of the country is reflected by the size of bubbles, which corresponds to the share of scientific publications from a science field in the country's total publications.

Slovakia – Positional analysis of publications in Scopus (specialisation versus impact), 2000–2010



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Science-Metrix Canada, based on Scopus
Note: Scientific specialisation includes 2000–2010 data; the impact is calculated for publications of 2000–2006, citation window 2007–2009.

Slovakia is well specialised in food, agriculture and fisheries, materials, environment, humanities, and socio-economic sciences, although no above-average impact is generated. Three other sectors (other transport technologies, aeronautics or space, and construction and construction technologies), with a low level of specialisation, have a certain impact. Considering the scientific specialisation index, over the period 2000-2010, Slovakia did not significantly improve either its scientific production rate or, consequently, new production technologies, which resulted in a very poor performance in intellectual assets (PCT patent applications, licence and patent revenues).

Both graphs show clearly that Slovakia's scientific capacity remains very weak. The country's key challenges are illustrated – also in relation to national drafted policy documents – but have yet to be sufficiently addressed. Among them are the weak R&D system and poor cooperation between academia and industry sectors. Low inputs (in terms of public and business R&D spending) correspond with low knowledge-intensive outputs. The Slovak economy is largely dominated by multinational companies (MNCs), which are not linked to its universities and research institutes, and carry out their research in their headquarters abroad. A very large number of domestic SMEs have no research activities because of the cost and potential risks. The low share of domestic innovative enterprises is limiting the country's competitiveness. In addition, scientific production is not of a high level and there is room to improve excellence in the sciences and the university system at national and international level as regards quality co-publications. Furthermore, there is a need to set up a 'sciences and knowledge culture', which is somewhat missing in the nation traditionally. Therefore, Slovakia must also support progress towards the European Research Area (ERA) priorities and ensure transparency, openness and a regulated competition framework of the national governance and business environment.

Policies and reforms for research and innovation

The 2014 National Reform Programme (NRP) confirms targets in R&I for 2020. It focuses on GERD and business expenditure on R&D (BERD) respectively to protect expenditure which promotes economic growth. The NRP sets out the most recent innovation policies indicating a shift towards more up-to-date measures to be implemented in the near future in terms of support for clusters, target groups and methods of funding (innovation vouchers). Since the challenges faced by the Slovak Republic today remain the same, the government has committed to supplementing its policy statement, in the shortest possible time. Further, it considers it is important to ensure that expenditure on productive areas, such as education, remain among its long-term political priorities in subsequent years too, and it will take steps to improve the quality of higher education and its relevance to market needs. It will also focus on measures that ensure smart, sustainable and inclusive growth.

The research policy priorities and policy mix were set in the 'Long-term Objective of the State S&T Policy up to 2015' document. The country's commitment to the EU-2020 targets was reaffirmed, especially regarding the country's challenges, in particular in R&D intensity as the Slovak public research system accounts for a relatively high share of funding from the Structural Funds. At present, the new strategic policies are intended to streamline national objectives towards the new EU policies in Europe 2020 and Horizon 2020. In this context, NRP includes further measures to improve collaboration between the public and private sector in terms of financial and organisational arrangements and human capital through partnerships, joint ventures and long-term contracts. People should be encouraged to run innovative businesses and this will be promoted by systematically including entrepreneurship teaching (including lessons on tax compliance) in the curricula of primary, secondary and tertiary education establishments.

Traditionally, R&I policies in Slovakia were considered to be matters for central government. Thus, Slovak regions have no legislative power in these fields. No explicit regional R&I programmes and/or policy measures have been developed. A tentative proposal to create regional innovation centres (RIC) was abandoned as being too complex. Slovak regions are characterised by both high and growing regional disparities in the R&D system. Efforts have been concentrated in the Bratislava region.

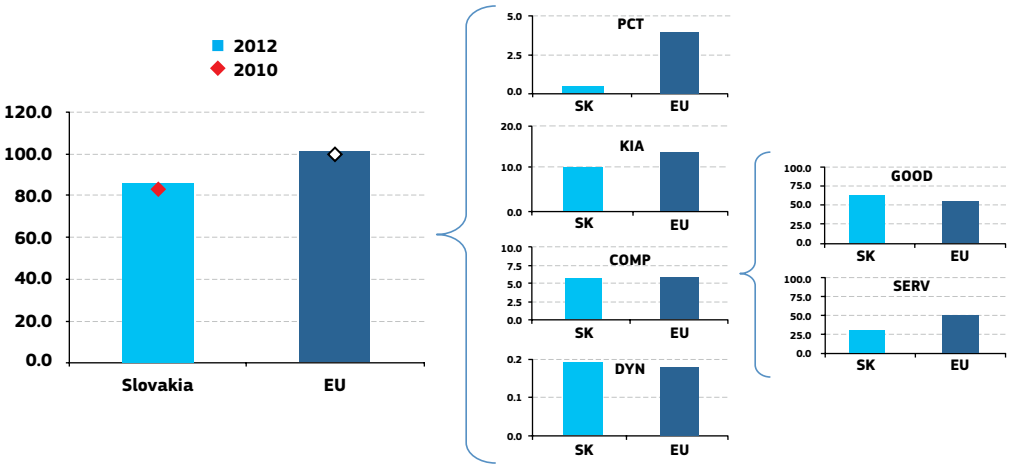
At the national level, the governance structure of the Slovak research system has changed little over last decade. Since 2007, responsibilities for the R&I policies have been divided between the Ministry of Economy (ME) and the Ministry of Education, Science, Research and Sport (MESRS). Innovation policy measures are implemented by the ME and its agencies. The ME implements the Operational Programme of Competitiveness and Economic Growth (OPCEG) and the MESRS implements the Operational Programme Research and Development (OPRD) and the Operational Programme Education (OPE). The 2014 NRP envisages the existing network of governmental implementing institutions to be merged into two integrated agencies: a research agency and a technology agency. The Research and Innovation Strategy for Smart Specialisation document suggested some important changes in innovation governance and identified key areas of economic and technology specialisation. The most important system change relates to the activities of the Slovak Government's Council for Science, Technology and Innovation (SGCSTI), established in September 2011, but only in operation since April 2013. The Council, which is chaired by the prime minister, is a cross-cutting body involving representatives of key central government ministries, higher education institutes, research institutions, and industry and employer associations. Its main task is to reduce fragmentation and secure effective work in the public R&D&I institutions. It follows coordination of the agenda and policies at the inter-ministerial level, which are of paramount importance for the efficient spending of funds in the years to come.

Overall, there is also scope for improving Slovakia's innovation capacity and business environment, in particular through more efficient public administration, and closer integration of the Slovak R&I system in the ERA would be an explicit objective of the national policy.

Innovation Output Indicator

The Innovation Output Indicator, launched by the European Commission in 2013, was developed at the request of the European Council to benchmark national innovation policies and to monitor the EU's performance against its main trading partners. It measures the extent to which ideas stemming from innovative sectors are capable of reaching the market, providing better jobs and making Europe more competitive. The indicator focuses on four policy axes: growth via technology – (patents); jobs (knowledge-intensive employment); long-term global competitiveness (trade in mid/high-tech commodities); and future business opportunities (jobs in innovative fast-growing firms). The graph below enables a comprehensive comparison of Slovakia's position regarding the indicator's different components:

Slovakia – Innovation Output Indicator



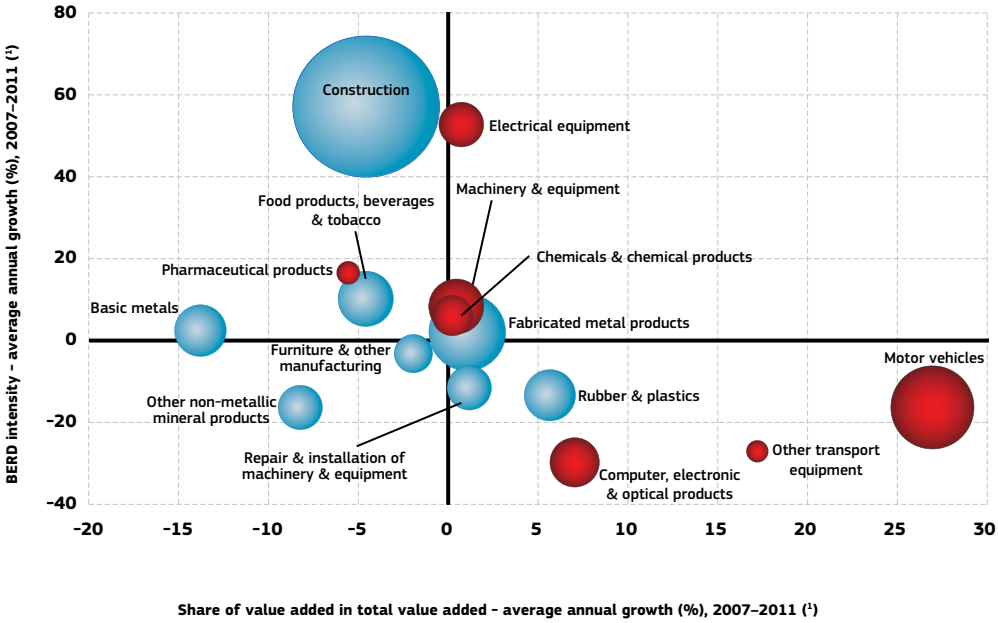
Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat, OECD, Innovation Union Scoreboard 2014, DG JRC
Notes: All data refer to 2012 except PCT data, which refer to 2010.
PCT = Number of PCT patent applications per billion GDP, PPS.
KIA = Employment in knowledge-intensive activities in business industries as % of total employment.
DYN = Innovativeness of high-growth enterprises (employment-weighted average).
COMP = Combination of sub-components GOOD and SERV, using equal weights.
GOOD = High-tech and medium-high-tech products exports as % total exports. EU value refers to EU-28 average (extra-EU = 59.7 %).
SERV = Knowledge-intensive services exports as % of total service exports. EU value refers to EU-28 average (extra-EU = 56 %).

Slovakia is a medium-low performer in the European innovation indicator, ranked well below the EU average. However, it performs not far from the EU average in most components, with the exception of patents, where the country performs at an extremely low level. On the other hand, the export share of medium-high/high-tech goods is above the EU average, similar to that of Germany. Slovakia is among the best European performers in this component, which can be explained by strong car exports as it has the highest per-capita car production in Europe. Slovakia is under-performing in the export share of knowledge-intensive services, which is explained by the relative importance of service exports such as tourism and land-based transport, not classified as KIS. Slovakia also performs at a low level in employment in knowledge-intensive activities in business industries as a % of total employment. It performs well as regards the innovativeness of fast-growing firms (above the EU average). To improve its overall performance, the country needs to improve its business environment by implementing innovative solutions (new start-ups, spin-offs), by providing administrative support to technology transfer from public R&D institutions, and by establishing a link between universities, the Slovak Academy of Sciences, and technology incubators.

Upgrading the manufacturing sector through research and technologies

The graph below illustrates with four variables the upgrading of knowledge in different manufacturing industries. The position on the horizontal axe illustrates the changing weight of each industry sector in value added over the period. The general trend of moving to the left-hand side reflects the decline in manufacturing in the overall economy. The sectors above the x-aces are those where research intensity has increased over time. The size of the bubble represents the sector share (in value added) in manufacturing (all sectors presented in the graph). The red sectors are high-tech or medium-high-tech sectors.

Slovakia – Share of value added versus BERD intensity: average annual growth, 2007–2011 (1)



Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat
Notes: (1) 'Furniture and other manufacturing': 2007–2009; 'Basic metals', 'Repair and installation of machinery and equipment': 2008–2011; 'Construction', 'Motor vehicles', 'Other transport equipment': 2009–2011; 'Pharmaceutical products': 2010–2011.
(2) High-tech and medium-high-tech sectors (NACE Rev. 2 – two-digit level) are shown in red.

As a small open economy with relatively high profitability and productivity growth, Slovakia enjoys a favourable external competitiveness position. Manufacturing plays an important role and accounts for 26 % of total value added against the EU-27 average of 15.5 %. However, Slovakia's industrial base is specialised in a few capital-intensive and cyclically sensitive sectors. While technology import has been a source of major productivity gains in the past ten years, this has made the country's economy quite vulnerable, being dependent on external demand.

The graph above synthesises the structural change in the Slovak manufacturing sectors over the 2007-2011 period. It shows that three medium- and high-tech sectors (motor vehicles, computer, electronic and optical products, and other transport equipment) have grown in economic importance (value added), while knowledge-intensity (as measured by R&D investments) in medium-sized, medium- or low-tech sectors, such as other non-metallic mineral products, repair and installation of machinery and equipment, and rubber and plastics, has declined. Economic expansion has been mostly related to the traditional automotive sector, followed mainly by the three sectors cited above. Nevertheless, most Slovak manufacturing industries did not upgrade their knowledge intensity over this period, which could indicate a medium-term risk to the sector in the context of increasing globalisation. Due to the weak innovation system, the innovation capacity of domestic firms remains limited.

Key indicators for Slovakia

SLOVAKIA	2000	2005	2006	2007	2008	2009	2010	2011	2012	Average annual growth 2007–2012 (1) (%)	EU average (2)	Rank within EU
ENABLERS												
Investment in knowledge												
New doctoral graduates (ISCED 6) per thousand population aged 25–34	0.57	1.17	1.37	1.52	1.82	2.13	3.18	1.86	2.44	**10.0**	***1.81***	**4**
Performance in mathematics of 15-year-old students: mean score (PISA study)	:	:	492	:	:	497	:	:	482	**-10.5 (3)**	**495 (4)**	**19 (4)**
Business enterprise expenditure on R&D (BERD) as % of GDP	0.43	0.25	0.21	0.18	0.20	0.20	0.27	0.25	0.34	***13.3***	**1.31**	**22**
Public expenditure on R&D (GOVERD + HERD) as % of GDP	0.22	0.25	0.28	0.28	0.27	0.28	0.36	0.43	0.48	**11.7**	***0.74***	**20**
Venture capital as % of GDP	:	:	:	:	:	:	:	:	:	:	:	:
S&T excellence and cooperation												
Composite indicator on research excellence	:	:	:	16.8	:	:	:	:	25.2	**8.5**	**47.8**	**20**
Scientific publications within the 10% most cited scientific publications worldwide as % of total scientific publications of the country	:	2.4	3.3	3.7	3.2	4.0	:	:	:	**3.2**	**11.0**	**23**
International scientific co-publications per million population	:	254	292	321	356	357	365	390	399	**4.5**	**343**	**23**
Public–private scientific co-publications per million population	:	:	:	11	11	12	15	16	:	**8.0**	**53**	**22**
FIRM ACTIVITIES AND IMPACT												
Innovation contributing to international competitiveness												
PCT patent applications per billion GDP in current PPS (EUR)	0.7	0.5	0.5	0.5	0.3	0.4	0.4	:	:	**-6.0**	**3.9**	**23**
License and patent revenues from abroad as % of GDP	0.08	0.16	0.16	0.20	0.17	0.11	0.05	0.004	0.005	**-52.8**	**0.59**	**28**
Community trademark (CTM) applications per million population	:	7	17	20	29	38	34	50	50	**19.6**	**152**	**24**
Community design (CD) applications per million population	:	3	6	6	5	8	6	10	8	**6.7**	**29**	**24**
Sales of new-to-market and new-to-firm innovations as % of turnover	:	:	16.7	:	15.8	:	23.3	:	:	**21.6**	**14.4**	**1**
Knowledge-intensive services exports as % total service exports	:	15.5	19.8	22.1	21.4	19.0	19.7	22.1	:	**-0.1**	**45.3**	**23**
Contribution of high-tech and medium-tech products to the trade balance as % of total exports plus imports of products	0.20	0.32	0.95	2.19	3.18	3.31	3.96	4.35	3.88	-	**4.23 (5)**	**7**
Growth of total factor productivity (total economy): 2007 = 100	77	90	94	100	102	97	101	102	104	**4 (6)**	**97**	**1**
Factors for structural change and addressing societal challenges												
Composite indicator on structural change	:	:	:	31.1	:	:	:	:	32.0	**0.6**	**51.2**	**26**
Employment in knowledge-intensive activities (manufacturing and business services) as % of total employment aged 15–64	:	:	:	:	10.0	10.1	10.1	10.6 (7)	10.1	**0.6**	**13.9**	**23**
SMEs introducing product or process innovations as % of SMEs	:	:	21.4	:	19.0	:	25.4	:	:	**15.6**	**33.8**	**20**
Environment-related technologies: patent applications to the EPO per billion GDP in current PPS (EUR)	0.06	0.03	0.04	0.02	0.02	0.03	:	:	:	**40.6**	**0.44**	**25**
Health-related technologies: patent applications to the EPO per billion GDP in current PPS (EUR)	0.07	0.00	0.03	0.04	0.03	0.002	:	:	:	**-80.1**	**0.53**	**28**
EUROPE 2020 OBJECTIVES FOR GROWTH, JOBS AND SOCIETAL CHALLENGES												
Employment rate of the population aged 20–64 (%)	63.5	64.5	66.0	67.2	68.8	66.4	64.6	65.0 (8)	65.1	**-1.3**	**68.4**	**18**
R&D intensity (GERD as % of GDP)	0.65	0.51	0.49	0.46	0.47	0.48	0.63	0.68	0.82	***12.3***	***2.07***	**22**
Greenhouse gas emissions: 1990 = 100	69	71	70	68	69	61	64	63	:	**-5 (9)**	**83**	**6 (10)**
Share of renewable energy in gross final energy consumption (%)	:	6.6	6.9	8.2	8.1	9.7	9.4	9.7	:	**4.3**	**13.0**	**19**
Share of population aged 30–34 who have successfully completed tertiary education (%)	10.6	14.3	14.4	14.8	15.8	17.6	22.1	23.2	23.7	**9.9**	**35.7**	**25**
Share of population aged 18–24 with at most lower secondary education and not in further education or training (%)	:	6.3	6.6	6.5	6.0	4.9	4.7	5.1	5.3	**-4.0**	**12.7**	**3 (10)**
Share of population at risk of poverty or social exclusion (%)	:	32.0	26.7	21.3	20.6	19.6	20.6	20.6	20.5	**-0.8**	**24.8**	**11 (10)**

Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research Policies
Data: Eurostat, DG JRC – Ispra, DG ECFIN, OECD, Science Metrix / Scopus (Elsevier), Innovation Union Scoreboard
Notes: (1) Average annual growth refers to growth between the earliest available year and the latest available year for which compatible data are available over the period 2007–2012.
(2) EU average for the latest available year.
(3) The value is the difference between 2012 and 2006.
(4) PISA (Programme for Internatonal Student Assessment) score for EU does not include CY and MT. These Member States were not included in the EU ranking.
(5) EU is the weighted average of the values for the Member States.
(6) The value is the difference between 2012 and 2007.
(7) Break in series between 2011 and the previous years. Average annual growth refers to 2008–2010.
(8) Break in series between 2011 and the previous years. Average annual growth refers to 2007–2010.
(9) The value is the difference between 2011 and 2007. A negative value means lower emissions.
(10) The values for this indicator were ranked from lowest to highest.
(11) Values in italics are estimated or provisional.

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