S3 Platform Peer-Review Workshop for National RIS3

Dublin

Research and Innovation Strategy for Smart Specialisation of the Slovak Republic

Slovak Republic – GENERAL INFORMATION

Slovak Republic is located in central part of the Europe, bordering with Czech Republic to the west, Hungary to the south, Ukraine to the east and Poland to the north.

The territory of the Slovak Republic consist of **49 035 km2.**

Total number of inhabitants is: **5 429 763.**

Capital city of the Slovak Republic is Bratislava with 431 061 inhabitants.

Slovak Republic became independent on 1 January 1993 after the peaceful dissolution Czechoslovakia, maintaining good relation and close links with Czech Republic in economic and cultural area.

Slovak Republic became the member of the EU in 2004.

Slovak republic is also member of NATO, UN, OECD and other international organizations

Slovak Republic – GENERAL ECONOMIC OVERVIEW

The Slovak Republic belongs to the most rapidly growing economies within the EU member countries. The gross domestic product per capita in purchasing power parity increased from 47 % of the EU27 average in 1995 to 73 % in 2012. The pace of convergence to the EU27 average in Slovakia was faster than in other new member states from the Central Europe

The economy of Slovakia is small and very export oriented. The share of export of products and services in the gross domestic product grew in the 1995-2012 period up to 95.4 %.

The export is dominated by goods, especially motor vehicles, articles of consumer electronics and metals and metal structures. Input-output analysis for the 2007-2009 period indicates that especially sectors of production of motor vehicles and consumer electronics are still more and more integrated into the production structures of the Slovak economy,

On contrary the high unemployment rate remains problem (currently at 12,96% in may 2014).

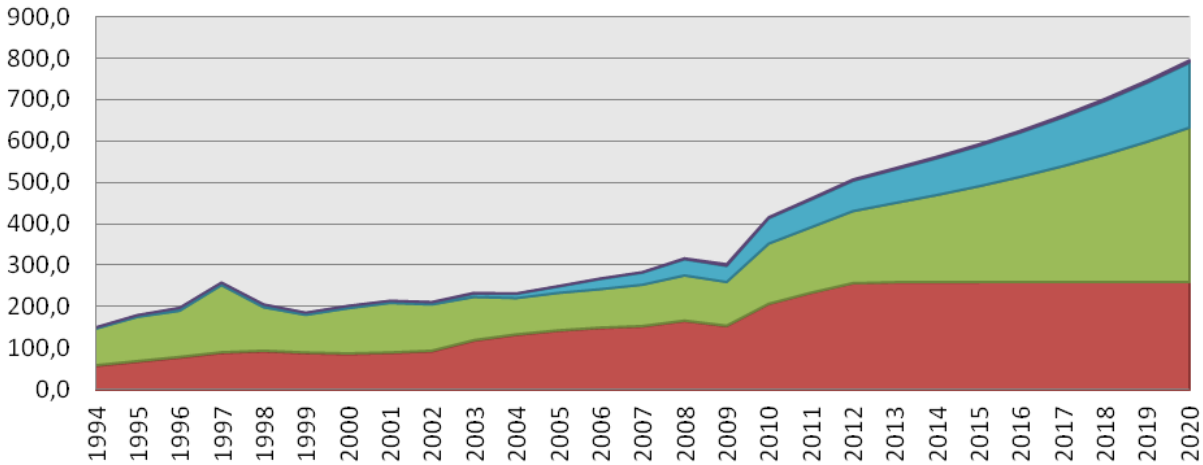
RESEARCH AND INNOVATION ENVIROMENT

- R & D expenditure in the Slovak Republic:0,82% GDP (2012)
- R & D personnel – total: 28 880 (18 126,6 FTE)
- Researchers: 25 069

Development of the share of R&D expenditure in GDP in %

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Slovak Republic	0,57	0,57	0,51	0,51	0,49	0,46	0,47	0,48	0,63	0,68	0,82
EU(28)*	1,87	1,86	1,82	1,82	1,84	1,84	1,91	2,01	2,00	2,04	2,06

Structure of R & D expenditure according to the sources

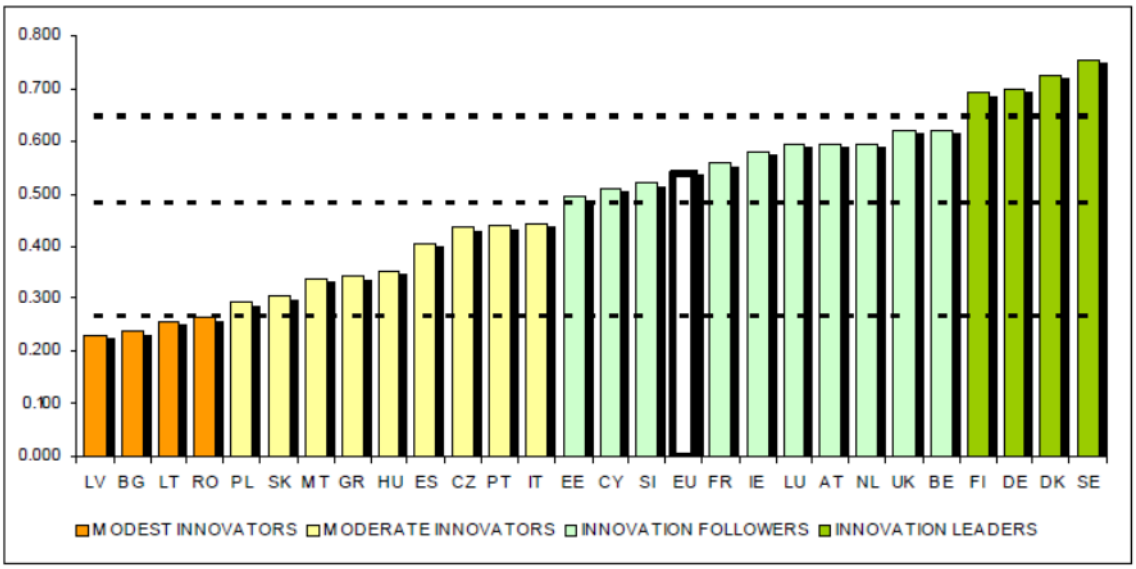


- Public expenditure

- Business expenditure
- International cooperation
- Non profit organizations

From a long-term point of view, Slovakia according to the Innovation Union Scoreboard (IUS) international comparison belongs to the EU countries which lag behind the EU average considerably in the innovation performance. Of 27 EU countries, Slovakia occupied the 20th position in 2011 and still belongs to the group of so-called moderate innovators with the second lowest innovation performance in the group

FIGURE 2: EU MEMBER STATES' INNOVATION PERFORMANCE



Note: Average performance is measured using a composite indicator building on data for 24 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1. Average performance in 2011 reflects performance in 2009/2010 due to a lag in data availability.

From the point of view of expenditures on research and innovations Slovakia permanently provides insufficient resources in this area. One of the reasons has been the selected form of privatisation of large companies when research and innovation departments have been separated and privatised which has led to their separation from practice. In the previous decade, the total expenditures for research and development were roughly 0.5 % of GDP, growing to 0.6% in recent years (in 2011 it was 0.68%). This growth has been made by growth of capital expenditures for appliances and equipment which can be caused by the use of the structural funds in research and development. In the 2010-2011, the resources for salaries were increased significantly. When comparing the total expenditures for research and innovations in other European economies (2.03% of GDP in 2011), Slovakia belongs to the countries with the lowest expenditures. An important part of public sources in research and innovations covers expenditures of basic research without connection to economic performance of the country.

Structural Funds: Operational programme Research and development with allocation of more 1.2 billion EUR was a dominant part of grant based funding in Slovak Republic

The main goals were modernizing the system of support for research and development and improvement of infrastructure in order to increase the competitiveness of the economy, reduce regional disparities, create new innovative (high-tech) SMEs, promote creation of the new jobs and improve the conditions of the educational process at universities.

Structural funds helped to significantly improve the level of R & D infrastructure in the Slovak Republic. In total 430 projects were supported with grants allocated mainly to universities with 56% share. Most funds were allocated to support ICT projects 234 000 000 EUR, Biomedicine and Biotechnology (175 000 000 EUR) and Food and Agriculture research (137 000 000 EUR).

However some problems have occurred during the implementation ranging from missing long term investment strategy, excessive administrative burden or low synergies with European research programmes.

R & D Infrastructure supported from structural funds:

- 67 Centers of Excellence (support excellent fundamental research)
- 8 Competence Centers (relatively large clusters of academic institutions and industry)
- 11 University Science Parks and Research Centres (5 already implementing Bratislava, Košice, Nitra, Žilina

Projects of the large University Science Parks and Research Centres:

- University science park Zilina
- University science park TECHNICOM for innovative applications to support knowledge technologies
- Research centre „AgroBioTech“
- University science park „CAMPUS MTF STU“ – CAMBO
- Medical University science park in Košice (MediPark, Košice)
- Research centre in Zilina university
- University science park Comenius university in Bratislava
- University science park STU Bratislava

Slovak Academy of Sciences (SAS)

Is the main actor in public R&D sector. As an independent scientific institution it is actively involved in basic and applied research in engineering, natural sciences, humanities and social sciences through 57 SAS institutes which are also external educational institutions for postgraduate stud and are involved in intensive international cooperation. With 75 million EUR budget (2011) the SAS employs over 1 800 scientists and nearly 500 postgraduates.

Currently the process to transform of the research SAS institutes into public research institutions already was started with legislative procedure. This change should allow these institutes to engage in more active cooperation with business.

Universities

In total 36 universities are based in the Slovak Republic - the state (3), public (20) and private universities (13).

In total 200 743 students studied at these universities in 2012.

Universities have been transformed into public institutions by law in 2002 which allowed developing of the multi-source financing. The basis is the state budget subsidy to which are added other sources on the base of standard contract. According to the law the public universities are defined as well as businesses, so they can benefit of its intellectual property. In 2012 440 000 000 was allocated to fund the universities within the state budget.

The current support for higher education has systemic problems (as identified by current report as the funding from state budget is designed in a way that does not reflect the active participation of universities in R&D activities, international cooperation.

Business sector – R&D&I overview

The Slovak economy is characterized by a dominance of the small and medium-sized enterprises (SME). Small and medium enterprises constitute 99.9% of Slovak enterprises and create 77.2% of the jobs in the private sector.

Small and medium enterprises are characterized by a dominant representation of micro-enterprises (entrepreneurs and firms employing less than 10 employees with a turnover lower than EUR 2 million per year). Micro-enterprises constitute 96 % of all enterprises in Slovakia.

The Slovak economy has been during the recent two decades since 1991 subject of unprecedented changes. In 1995, 135 enterprises were producing 66% of the total production, 70% of export, 51% of employment and 63% of assets of processing industry as a major sector of the economy. 90% of these enterprises were in state ownership or in a mixed state/private ownership. The horizontally and vertically integrated enterprises with high concentration rate and savings were the most effective. In 2010, practically the same figures in the Slovak economy were made by approximately 215 enterprises with 85% owned by foreign companies and decrease of employment by almost 50% since 1995.

The share of export in this key segment increased in the 1995-2010 period by more than 30% of GDP up to the level of more than 80% of GDP, the rate of intrasectoral foreign trade grew from 40% to 75%. Slovakia has so become the most involved economy of the EU and OECD into so-called „global supply chains“ with 85% rate of synchronisation of economic cycle with economic growth in the „old“ EU15. A part of the segment of SMEs was being created after completion of the process of privatization through dislocation or outsourcing of some parts after privatization of state-owned companies.

This has affected the structure of the Slovak industry and linkage between large companies and medium enterprises. According to the 2013 survey one large company owned by Slovak entity (not MNC) is linked directly to 600-1200 small and medium enterprises as sub-suppliers (except for self-employed persons).

The main highly important factors that limits the possibilities of further innovation of Slovak innovative companies is cost based factors such as insufficiency of resources within the enterprise (27 %) or too high costs of innovation (23 %).

The share of business expenditures in research and innovations is roughly 0.25% of GDP (2% of GDP in developed economies). The main reason is the lack of R&D activities of large companies owned by international corporations who has little ambitions to establish the research centres and reallocate their research activities to the Slovak republic. The SMEs investment to the R&D is hindered by lack of human and financial resources.

INTERNATIONAL COOPERATION

Organizations from Slovak Republic have successfully participated in EU framework programme (FP6, FP7). However the success rates remained unsatisfactory so far. According to EC database ECORDA Slovak organizations participated in 376 FP7 projects. The regained EC financial contribution to Slovak participants in FP7 is 73 521 984 EUR. Most Slovak organizations participated in ICT, Energy Food and Agriculture and Nanosciences area. On contrary ERC (excellent basic research) with only one participation was the least successful. The biggest share of participation was secured by the Slovak Academy of Sciences (12 600 000 EUR). One of the positive outcomes is relatively high participation of enterprises with 34% share.

New Horizon 2020 programme as a successor of FP7 will be crucial priority for Slovak republic, already some measures were implemented to support widening participation in this programme (professionalization of NCPs, new Liaison office in Slovak Republic.

Slovak republic is also an active member of other European and international research and innovation programmes and initiatives such as Danube Strategy ENIAC, ECSEL, EUROSTARS, CERN, DUBNA, EMBC.

One of the continuous priorities is the involvement of the Slovak Republic in pan European infrastructure projects implemented under ESFRI Roadmap. Currently Slovak Republic is member of European XFEL, ESRF, ILL 20/20 ESS Survey, FAIR a PRACE.

Slovak Republic is also interested in becoming member of European Space Agency (ESA). The procedure to become involved in PECS programme for cooperating country has already started in Slovakia.

IDENTIFIED WEAKNESSES FOR R&D&I in the Slovak Republic

- Insufficient share of own (Slovak) R&I activities in export sectors in Slovakia
- Absence of corporate industrial research In Slovakia
- Insufficient integration of domestic businesses into sub-supplier chains for MNCs
- Undercapitalization of businesses associated with low innovation performance, especially SMEs
- Marginal application of revolving schemes including venture capital for R&I support. Absence of the system for the application of venture capital
- Low own added value of production of domestic businesses
- Absence of the complex R&I strategy and its implementation
- Excessive number of broadly defined priorities of state policy in the area of science
- Fragmentation of resources for building R&I infrastructure on a national level (state budget, structural funds)
- Extensively built R&I infrastructure
- Barriers for companies to access the infrastructure of public R&I workplaces
- Administrative barriers to implementation of projects financed from structural EU funds into practice
- Low level of cooperation between academic sector and industry
- Low share of national resources allocated to financing R&I
- Low involvement of Slovak bodies in 7. framework programme (FP7)
- Insufficient competitiveness of Slovak R&I organizations within EU
- Dysfunctional national innovation system
- Barriers to utilizing the protection of intellectual property rights
- Ineffective use of resources for the transfer of knowledge and technologies into practice
- Absence of indirect tools and motivational environment for the R&I support
- Low law enforcement
- Absence of legislation stimulating the acquisition of innovative products
- Educational system is not linked to the practical needs, especially in the area of technical and natural sciences
- Absence of the system and the support of business education and development of creativity in the educational process
- Low number of efficient R&I employees focused on the

IDENTIFIED STRENGHTS FOR R&D&I in the Slovak Republic:

- **Key industrial sectors represented by MNC**
- **Competitive technological level and production level in export sectors**
- **Increasing interest of businesses and industrial clusters in rebuilding of industrial R&I structures (entities)**
- **Increasing share of information services in export services**

- **Good results in selected scientific and technological disciplines, with concentrated research teams and workplaces (materials and nanotechnologies, information and communication technologies, biomedicine and biotechnologies, industrial technologies, energetics and energy, environment and agriculture, social sciences and humanities),**
- **Dynamic growth of ICT usage in all business processes**
- **The quality of human resources in the competitive production sectors stemming from the tradition**

CONTEXT AND APPROACH

RIS3 SK was developed as the national smart specialization strategy in line with the European Commission methodological recommendations: Guide to Research and Innovation Strategies for Smart Specializations.

All relevant partners including representatives of universities, research organizations and entrepreneurs were included in the process

The vision of the RIS3 SK is to drive a structural change of the Slovak economy towards growth based on increasing innovation capability and R&D excellence to promote self-sustaining growth in income, employment and standard of living.“

The main strategic goals include:

1. Deepening integration and embeddedness of key major industries increasing local value added through the cooperation of the local supply chains and turning local supply chains into embedded clusters
2 Increased contribution of research to the economic growth via global excellence and local relevance
3. Creating a dynamic, open and inclusive innovative society as one of the preconditions for the increase in the standard of living
4. Improving the quality of human resources for an innovative Slovakia

One of the specific goals in the field of research is to increase the share of total expenses for R&D to at least 1.2 % of GDP by 2020 in the Slovak Republic. Since the public expenses for R&D are currently double the private expenses, private sector will be increasingly motivated to maximize its expenses for R&D (for example through tax incentives).

The measures to reform the education (including the universities and high schools) will be implemented in order to increase the employability of the graduates. More effective links between the education and practice will be supported. The focus on lifelong learning is endorsed as well.

Emphasis will be put on international cooperation in research and development. Increase of the participation in new Horizon 2020 will be actively supported through set of measures including new Slovak research and development office in Brussels or professionalization of Horizon 2020 NCPs.